2011

Evaluation of the Impact of the Creating Opportunity for Personal Empowerment (COPE) Healthy Lifestyles Thinking, Emotions, Exercise, and Nutrition (TEEN) Program in a Rural High School Health Class

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Doctoral Research Project submitted to the
School of Nursing
at West Virginia University
in partial fulfillment of the requirement
for the degree of

Doctor
of
Nursing Practice

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Morgantown, WV

2011

Keywords: adolescent obesity, school based, weight loss, rural, health class, cognitive behavior

Abstract

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Background

More than 12.5 million children in the United States are overweight. More specifically, in 2007, 31% of 9th grade students in West Virginia were overweight. Healthy People 2010 identified obesity as among the top ten health issues and set a goal to reduce the proportion of children and adolescents who were overweight to 5%. This goal was not attained because most current interventions to prevent and treat obesity have not been effective in changing the weight status of children and adolescents. However, cognitive behavioral interventions, combined with parent education have been found to be an effective strategy in weight loss among adolescents.

Objectives

The primary goal of this project was to increase healthy lifestyle behaviors in 9th graders in a rural health class after receiving the COPE TEEN program. Secondary outcomes included that teens would: have stronger beliefs about the ability to engage in a healthy lifestyle, perceive living a healthy lifestyle as less difficult, increase the amount of time spent in physical activity, have a higher self-esteem, lose weight if overweight at the start of the program, and that parents would be able to help their teen achieve healthy lifestyle goals. A third outcome was to determine the feasibility of this program as part of the health class curriculum in a rural high school.

Design

This study used a pre-experimental design with pre- and post-testing. The COPE intervention was incorporated into the health class curriculum for ninth grade students during the 2009 fall and spring semesters. Cognitive behavior skills building (CBSB) sessions were conducted once a week for 15 weeks during the regular scheduled health class. Each weekly class involved 30 minutes of CBSB education, followed by 20 minutes of physical activity. The intervention included a parent education component by newsletter three times during the program. Pre- and post- measurements included: BMI (calculated from height and weight), BMI %, teen healthy lifestyles behavior, cognitive beliefs, perceived difficulty in leading a healthy lifestyle, self-esteem, and parent's healthy lifestyle behaviors, beliefs, and perceived difficulty in leading a healthy lifestyle. Other data included a post-intervention exit questionnaire consisting of five open-ended questions about the participants' perception of the helpfulness of the COPE program.

Subjects

Fifty-five students began the program and forty- nine (89%) completed the entire 15 week program. All the students were enrolled in the ninth grade health class with a mean age of 14.67 years.

Results

Teens healthy lifestyles behavior improved during the 15 week COPE Program with a statistically significant improvement in the students' healthy behavior scores from Time 1 (M=51.32, SD=11.15) to Time 2 (M=57.45, SD=9.71), t (43) 3.93, p=.000 (two-tailed). There was a statistically significant difference in self-esteem of a sub-group of eight teens with low-esteem at baseline. Self-esteem scores improved in this group from Time 1 (M=20.41, SD=5.98) to Time 2 (M=21.54 SD=5.63) p=.010. Although not statistically significant, there was an increase in healthy lifestyles beliefs as well as a decrease in perceived difficulty among the COPE teen participants, which resulted in positive effect sizes for the intervention. The parents of the adolescents participating in the program had increased healthy lifestyle behaviors and beliefs and a decrease in perceived difficulty to engage in a healthy lifestyle. Forty-nine percent of the students lost a total of 143.6 pounds and 6% maintained their weight. BMI % improved in seven teens resulting in them moving from a category of obese to overweight or overweight to healthy weight. Only one student had an increase in BMI %.

Conclusion

The COPE Program which consists of education with cognitive behavioral skills building combined with physical activity and parent newsletters is an effective strategy in improving healthy lifestyles behaviors and weight management among teens, and can be easily incorporated into the curriculum of a rural high school health class.

Dedication

I would like to dedicate this work to the memory of my parents, Rev. Gerald and Rev. Clarice Daniel. They always encouraged me to reach for the stars. They taught me that hard work is the key to success and that love and forgiveness can conquer all things.

Acknowledgements

As I close this chapter of my life, I pause and reflect upon the past three years as I traveled down this doctoral path. During these years I experienced the beauty of new life with the birth of three precious grandsons, witnessed the joy of young love in the marriage of my youngest child, and lost my best friend with the passing of my mother from breast cancer. Through it all, there were many who shared in my joy, cried with me during my time of sorrow, and stood by me every step of this wonderful journey. I wish to pause for a moment and express my sincere "thanks" to each one of you.

- To the chair of my committee Dr. Susan McCrone. I can never thank you enough. You stood by me through it all and offered your guidance, your expertise, and most of all your kindness. You offered me a shoulder to cry on when I lost my mother and strength to keep me moving forward when there did not seem to be enough hours in a day to get it all done. I will always be grateful to you.
- To committee members Dr. Bernadette Melnyk and Dr. Lisa Hardman. Dr. Melnyk, thank you for being so willing to share your COPE program. Your expertise and guidance helped make my project a success and touched many teens' lives in my community. Dr. Hardman, I can never thank you enough for your constant support and encouragement. You were always just a phone call away and seemed to have just the right answer. Your leadership skills are amazing. Thank you.
- To Stacy Culp. When I sent out a "HELP" email for a statistical problem, you always came through. Thank you.
- To Dr. Cynthia Persily and Dr. Mary Jane Smith, my mentors for many years. Your role model as a nurse and an educator influenced my desire to continue my education. I am

here today because you encouraged me to reach a little farther. I sincerely thank you both.

- To my colleagues, Dr. Peggy Burkhardt and Dr. Jarena Kelly, thank you for your help at times when I couldn't fit it all in. I appreciate you so much.
- To the high school health teacher Mr. Matt Walker, the school nurse Joyce Morgan, RN, the secretary Sheryl Stevens, the principal Karen Kirby, and the Superintendent of Schools Roger Propst. Thank you for all your support and help. You helped make this program successful.
- To my children and grandchildren Lindsay & Josh, Todd & Britt, Ty & Kristy and Malakai, Logan, and Ezekiel. You make my world go round. Thank you for hanging in there with me. I love you! "Boys, Nana is back."
- Most of all to the love of my life, my husband Michael who has stood behind me in every endeavor. Words can never express how much I appreciate you. I love you so much. I publicly promise "to take over the laundry and cook dinner again."

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CHAPTER I INTRODUCTION

Background and Significance of Proposed Intervention

Problem Statement

Today, more than 12.5 million children in the United States (US) are overweight (US Department of Health and Human Resources [USDHHR], 2007). However, obesity among children is not just a problem in the U.S., but around the world with at least thirty-four other countries reporting similar findings (Summerbell et al., 2005, p. 2). Worldwide, an estimated 43 million children under the age of 5 years were overweight in 2010 (World Health Organization [WHO], 2010). Recent reports highlighted the severity of obesity by suggesting that for the first time in over a century, children of today's generation will have a shorter life expectancy than that of their parents (Hills, King, & Armstrong, 2007, p. 533). Healthy People 2010 identified obesity as among the top ten health issues in the United States and set a goal to reduce the proportion of children and adolescents who were overweight to 5%. However, according to the most recent data from the Center for Disease Control (CDC, 2010), the United States has made very little progress toward reaching this goal.

To determine if a child is overweight or obese, the CDC recommends using its BMI growth charts based on the age of the child. Currently, children with a BMI $\geq 95^{th}$ percentile are obese, and those $\geq 85^{th}$ percentile are considered overweight (CDC, June, 2010). Since 1980, the prevalence of obesity among adolescents has escalated at a staggering rate. According to a report by the United States Surgeon General, in 1999, 13% of children aged 6–11 years and 14 % of adolescents aged 12–19 were overweight (USDHHR, 2007). Current estimates have found that these numbers have more than doubled during the past decade with approximately 31.7% of children age 2–19 in the United States now being reported as overweight, and 16.9% as obese

(Ogden, Carroll, Curtin, Lamb, and Flegal, 2010). In 2008, the CDC reported data showing an increased prevalence in overweight children aged 2 – 5 years from 5 % in 1980 to 10.4 % in 2008. Similarly, the prevalence of overweight among those aged 6 – 11 years rose from 6.5% to 19.6 % during this same time period, while those aged 12 – 19 years increased from 5 % to 18.1% (CDC, 2010).

In the U.S., Mississippi ranks first in child obesity with 44.4 percent of its children, aged 10 to 17 years being overweight. Ranking eighth in the nation, 35.5% of the children in West Virginia (WV) in this same age group were overweight (Kaiser Family Foundation State Health Facts, 2007). According to recent statistics, all 55 counties in West Virginia ranked higher (32%) in overall obesity when compared to the 25% U.S. national benchmark (Robert Wood Johnson Foundation, 2011). Similarly, the 2009 Youth Risk Behavior Surveillance Survey (YRBSS) reported that 31% of students in grades 9 – 12 in West Virginia were overweight or obese (Eaton et al. 2009). Data from the same survey found that 30.6 % of these students described themselves as overweight and 48.4% were trying to lose weight. Among these adolescents, 10.6% reported not eating for at least 24 hours, while 5 % responded that they took diet pills in an effort to lose weight (Eaton et al., 2009).

The prevalence of weight-related medical problems is directly related to childhood obesity (Rodearmel et al., 2007; CDC, 2010). Adolescents who are overweight have a higher incidence of developing multiple health problems such as coronary heart disease, diabetes, hypertension, dyslipidemia, and cancer, as well as other devastating diseases (CDC, 2006, 2010). Aside from the many physical complications, childhood obesity poses a negative impact on the quality of life of obese children and adolescents (Flodmark, Marcus, & Britton, 2006). Psychosocial and psychological problems are more prevalent in obese children (Edmunds, Waters, & Elliot, 2001).

These children often experience low self-esteem and depression as a consequence of obesity (USDHHS, 2006).

The cost to treat medical conditions related to obesity was approximately $78.5 billion in 1998, $92.6 billion in 2002, and had increased to $147 billion a year in 2008 (CDC, 2007, 2011). Although no data is available for the total cost of treating obesity related diseases in WV, an estimated $200 million was spent by Medicaid and the Public Employees Insurance Agency (PEIA) in 2001 (WVDHHR, 2006). Unless effective interventions are found to treat and prevent adolescent obesity, these costs can be expected to continue to escalate.

As a clinical condition, obesity is a troubling health issue with no one single etiology. There are multiple contributing factors that result in child and adolescent obesity that are influenced by biophysical, psychological, social, and environmental conditions. Poor dietary behaviors pose a risk for the development of obesity in children and adolescents (WHO, 2010; Patrick et al. 2006, p.128). Change in eating habits over recent decades is a main issue among young people. From the 1970's to 2000, the average caloric intake increased by 133 calories per day (Patrick et al. 2006). Body weight and BMI are directly related to physical activity and energy expenditure (Spiegel & Foulk, 2006). On average, children aged 8 to 18 years spend four hours daily in front of a television, video, or computer screen (CDC, 2007; Harper, 2006). In WV, 78% of the counties reported a significantly higher prevalence of sedentary time as compared to the national average (West Virginia Bureau for Public Health, 2006). Poor dietary behavior compounded with a decrease in physical activity and increased sedentary time has resulted in more calories being consumed than utilized with the end result being obesity.

As public awareness of the seriousness of obesity has grown, public officials have begun to bring about policy changes to lower the obesity rate. Many states have implemented programs aimed at reducing obesity in adolescents, most of which focus on changes in school programs. During the 2005 WV legislative session, legislators declared that children in WV were becoming more sedentary, more overweight, and were more likely to develop health risks and diseases. In response, the legislature established physical education guidelines in schools, limited the sale of sugar drinks, and mandated fitness testing through BMI measurements (WV Bureau for Public Health, 2006). The ultimate goal is to promote healthy lifestyles among school-aged children in West Virginia.

Health class during high school offers an opportunity to educate adolescents on healthy lifestyles that can carry over into adulthood. In a recent review of the literature, evidence supports the effects of the Creating Opportunities for Personal Empowerment (COPE) Healthy Lifestyle Thinking, Emotions, Exercise, and Nutrition (TEEN) program in weight loss of overweight adolescents (Melnyk et al., 2007). The purpose of this project was to evaluate the effectiveness of the COPE Healthy Lifestyle School-Based Program as a curriculum change for the 9th grade health class in a rural high school in West Virginia.

Theoretical Framework

The theoretical frameworks guiding this project was a combination of the Theory of Planned Behavior (TPB) (Aizen, 1985), and Cognitive Behavior Theory (CBT) (Beck, Rush, Shaw, & Emery, 1979). The TPB proposes that a person's behavior is guided by three major components: behavioral beliefs, normative beliefs, and control beliefs. Behavioral beliefs are the beliefs about the outcome of engaging in a particular behavior and the evaluation of that outcome. From behavioral beliefs, an individual will develop a positive or negative attitude toward the behavior.

Normative beliefs are one's belief about how the people in his or her social circle will view the behavior, and the motivation of the individual in pleasing these people. One's perception of the peer pressure or subjective norm will then be formed. If one desires to please those in the social circle, the individual will be motivated to behave in a manner pleasing to the people in that group. Finally, control beliefs are a person's belief about what might facilitate or impede him or her from performing the behavior and how powerful any barriers are believed to be. Therefore, one's attitude toward the behavior combined with subjective norm and perception of behavioral control results in the formation of a behavioral intention. Aizen (2006) further believes that a positive attitude and subjective norm along with strong perceived control will lead to the person's intention to perform the behavior. Additionally, if an individual actually has control over the behavior, he or she will most likely carry out the intentions and engage in performing the behavior.

The second theory guiding the COPE Healthy Lifestyles TEEN program is the Cognitive Behavior Theory (Beck, Rush, Shaw, & Emery, 1979). The underlying premise of this theory is that an individual's feelings, emotions, and behaviors are directly affected by the way he or she thinks (Beck, Rush, Shaw, & Emery, 1979). Melnyk and colleagues (2007) suggest that this can be illustrated as a triangle consisting of thinking, feeling, and behavior. Consistent with this theory, if an individual has negative thoughts and feelings, it is reasonable to believe he or she will exhibit negative behaviors. In a descriptive correlational study with overweight teens (B. Melnyk, personal communication, 2009), teens with higher self-esteem exhibited stronger beliefs that they could engage in healthy lifestyles behavior. This belief led to a positive attitude toward healthy living and healthier lifestyle choices. In comparison, teens who believed that engaging in

a healthy lifestyle was too difficult had fewer healthy attitudes and made less healthy lifestyle choices (Kelly, Melnyk, Jacobson, & O'Haver, in press); Melnyk et al. (2006).

Application of the Theories to the COPE Capstone Project

The COPE Healthy Lifestyles TEEN intervention used in this capstone project consists of 15 educational and cognitive-behavior skills building (CBSB) sessions with physical activity. The project leader conducted each session, once a week during health class for all 9th grade students at Calhoun Middle/High School. Each session focused on a different aspect of healthy living. Specific topics included: (1) healthy lifestyles, (2) self-esteem and positive thinking, (3) overcoming barriers, (4) stress and coping, (5) dealing with emotions, (6) personality and effective communication, (7) activity, (8) heart rate and stretching, (9) nutrition, (10) reading labels, (11) portion sizes, (12) social eating, (13) snacks and eating out, (14) healthy choices, and (15) integrating knowledge and skills. In this project, the intent of the CBSB sessions was to aid the adolescent in developing a behavioral belief that changing his or her behavior to a healthy lifestyle would have a positive outcome. The goal was for this belief to result in the adolescent forming a positive attitude toward the healthy lifestyle behavior. The end result would be the intention to participate in a healthy lifestyle behavior. Though the relationship between behavior, intention, and actual behavior is not perfect, according to Francis and colleagues (2004), intention can be used as an end measure of behavior. The program was intended to strengthen the beliefs of the teen in the value of healthy lifestyle behaviors and his/her ability to engage in them, which should lead to healthier lifestyle choices and behaviors.

The second concept, normative beliefs, is based on the social influence measured by the evaluation of various social groups such as parents, peers, and school. Findings of recent research indicate that interventions involving parent education are effective in weight loss

(Melnyk et al. 2007; Tsiros et al. 2008). The COPE intervention included a parent education component. Each parent was sent an educational letter three separate times (See Appendix A: Parent Newsletter One) during the intervention period informing them about the content being provided to their adolescent during the school-based COPE program. The letter included tips on how the parents can assist their child in attaining his/her healthy lifestyle goals, as well as a health maintenance plan to initiate once the COPE program ends. The positive attitude of the peers who were participating in the intervention strengthened by the support of the parents could give the adolescent a normative belief that those in their social circle approve of the healthy lifestyle behavior. Thus, the perceived social pressure, or subjective norm, was expected to motivate the adolescents resulting in an intention to engage in a healthy lifestyle behavior.

The final concept, control beliefs, deals with barriers that the adolescent believes can interfere with his/her ability to perform the behavior. In the study by Melnyk et al. (2007), participants identified areas where the COPE program provided positive changes. These included: learning the value of nutrition, changing eating habits, learning tools to make the right decisions, and learning how to build confidence, to cope with stress, and to increase physical activity. Similarly, with the new knowledge and tools learned from the COPE intervention in this capstone project, the adolescents' control beliefs could change in a positive direction. Perceiving the barriers to be minimal, the adolescent may change his or her negative behavior to a positive behavior that could once again result in the intention to engage in healthy lifestyles behavior. The perceived behavioral control could be strengthened by a positive attitude and the adolescent may be empowered to follow through on his/her intentions and perform the healthy lifestyles behavior that leads to weight loss.

This COPE Healthy Lifestyle TEEN intervention is based upon cognitive behavioral theory with an emphasis on cognitive-behavior skills building (CBSB). The CBSB sessions provided the teens with information and skills building to strengthen their knowledge and cognitive beliefs about engaging in healthy behaviors that will subsequently facilitate healthy lifestyle choices and behaviors. With the increased knowledge, the teen may develop stronger beliefs (thinking) that he/she can engage in healthy lifestyle living. This belief could result in a positive attitude toward healthy lifestyle choices leading to healthier lifestyle behaviors.

CHAPTER II REVIEW OF THE LITERATURE

The purpose of the literature review is to critically review the evidence found in the literature as it relates to adolescent obesity. The research question posed by this author is: In children and adolescents, are changes in dietary intake, physical activity, and sedentary behavior effective in the management and prevention of overweight and obesity?

Search Strategy

The child and adolescent obesity search strategy included an extensive online search of CINAHL, MEDLINE, PUBMED, National Guideline Clearinghouse, and Cochrane Library. These databases were initially searched for documents from January 1998 to December 2007. This was later updated to include February 2011. Additionally, a search for government documents offering further statistics on the prevalence of the problem was completed using the worldwide web. Using keywords adolescent obesity, the initial search rendered 5,049 hits. Next, the author narrowed the search using additional keywords to include child obesity, overweight children, overweight adolescents, and child obesity prevention. This search identified a total of 923 hits. To further narrow the search of the same database, keyword combinations were then used. These included: preventing obesity and children, physical activity and child obesity, and intervention strategies and child obesity. Additionally, limitations to include randomized control trials, (RCT) and research studies were inserted. This search revealed 111 hits. Language, age, and country were not restricted in the search. Snowballing, a technique used to check references cited in relevant evidence, was utilized and one additional RCT was retrieved using this search method. Sixteen relevant documents were finally extracted to be used in the review.

Inclusion Criteria

Inclusion criteria for the documents required the terms, weight management of children and adolescents and/or obesity prevention of children and adolescents appearing in the title. Periodic literature searches were conducted with the most recent being February 20, 2011. Three additional RCT's were added to the original systematic review, both utilizing cognitive behavior therapy. Of the final 45 documents selected, four were systematic reviews, three clinical practice guidelines, eight were RCTs, and one qualitative study. The remaining documents included research reports, pilot studies, government data, expert committee reports, and scholarly papers. In addition, personal communications with experts in child and adolescent obesity, the COPE program, and school personnel is included in the evidence presented.

Systematic Reviews

Four systematic reviews were appraised for validity using the Scottish Intercollegiate Guideline Network (SIGN) criteria. (Flodmark, Marcus, & Britton, 2006; Summerbell et al., 2005). The first review focused on interventions to prevent obesity in children and adolescents used clear and concise methodology to review the evidence of interest (Flodmark, Marcus, & Britton, 2006). This review included 24 randomized controlled studies involving 25,896 school aged children and adolescents with follow-up for 12 months. Though the majority of these studies were conducted in a school based setting, this was not an inclusion criteria for the review. However, all studies included in this review required outcome measurements of at least one of the following: skinfold thickness, BMI, or mean percent of overweight of the participants. To be considered as having a positive effect, a reduction in one of these measurements had to be statistically significant ($p < 0.05$). Eight school based studies focusing on prevention interventions had a statistically significant positive effect on obesity, 16 reported neutral results,

and none were found to have negative results. Included in this systematic review were the findings of five other systematic reviews, resulting in a total of 15 studies yielding positive results, 24 neutral findings, and again none with negative findings. The final total of participants was 33,852 with 40% of the children studied showing a positive effect in obesity prevention. These results were found in 41% of the studies. The evidence from this systematic review concludes that school-based programs incorporating interventions encouraging healthy dietary habits and physical activity can be effective in preventing obesity in children and adolescents (Flodmark, Marcus, & Britton, 2006). A strength noted in this systematic review is the fact that many of the studies identified did not present positive results but were none-the-less published, avoiding the bias of incorporating only published studies with positive results. The authors of this systematic review were unable to identify a particular differentiating factor between the interventions resulting in positive findings and those that did not, indicating need for further research. A second strength of this review is that experts from other countries were involved in completion of the review, further decreasing the risk for bias.

The second systematic review addressed updated evidence from studies to compare the effect of multi-component interventions to prevent childhood obesity (Summerbell et al., 2005). The search was rigorous and identified 22 relevant studies from 1990 – 2005 involving participants less than 18 years at the onset of the study. All the studies were either randomized controlled trials (RCT) or controlled clinical trials with a minimum duration of 12 weeks. Nineteen of the studies were school-based interventions, two were family focused involving non-obese children and parents, and one was community based. Ten of the studies were long term (1 year or more) and 12 were short term studies (3 months up to 1 year). The authors of the systematic review found it impossible to combine the findings of the studies using statistical methods due to the

heterogeneity of all of the interventions in the studies, therefore P-values were not reported. Five long-term studies combining dietary education and physical activity interventions resulted in no difference in overweight status, while one study showed positive results for girls, but not for boys. No difference was found in two studies that focused on nutrition education alone, however physical activity alone was effective in preventing obesity in one study. On the other hand, two short term studies with a physical activity intervention were found to have positive results, but there were no significant results in eight short-term studies combining physical activity and dietary education. In conclusion, the results of the studies included in this review indicated that current interventions have not significantly impacted the weight status of children and adolescents. However, as pointed out by Summerbell et al., (2005), there were small improvements noted in the studies combining dietary and physical activity interventions, indicating the need for further research expanding on these interventions.

To evaluate the effectiveness of lifestyle interventions in overweight youth, Kitzmann et al., (2010) conducted a meta-analysis of 76 studies. All the studies in the review had a before and after design with an intervention and control group. Interventions included in the meta-analysis were those that: focused specifically on weight loss or prevention and behavior changes related to weight loss; were designed to treat overweight adolescents; and were concentrated on efficacy and evaluation of weight reduction treatments. Participants were required to be children or adolescents under the age of 19 and be overweight. In addition, only studies that assessed treatment outcomes of weight, BMI, or BMI percent and were measured at the same point in both groups were included. Case studies and qualitative studies were excluded and all reports were required to include empirical data and effect size, be written in English, and conducted in 2004 or earlier. The final studies selected for the analysis were reported between 1965 and 2004.

The length of the interventions ranged from 1 week to 104 weeks with the median length being between 12 and 16 weeks and median session number was 14 with a range of 1 to 144. Lifestyle interventions included in the review involved some combination of diet, physical activity, nutrition counseling for children, parents or both, and parent training in behavior management. Sixty-six of the studies involved a parent component with varying degrees of involvement. Some studies required parents to attend sessions alone, others only with their child, or both.. The length of time the sessions were held did not impact the effectiveness. Significant findings were found in studies where the intervention lasted less than 4 months as well as those lasting 8 months. Results from this meta-analysis indicated that lifestyle interventions that included behavioral management parent training, most of which included discussion sessions, had significantly better outcomes than those without parent involvement. Some studies that did not involve parent education still resulted in significant weight loss among participants. However, the studies that involved parent education had significantly more weight loss among participants in comparison to those without parent education. The findings of this meta-analysis support that multi-component lifestyle interventions can be an effective treatment for weight loss and obesity prevention among youth. In addition, parent education was found to be a key component with improved outcomes among the children/adolescents whose parents were targeted for behavior modification as well.

Another meta-analysis (Harris, Kuramoto, Schulzer, & Retallack, 2009) studied the effect of school-based physical activity interventions on BMI in children. A search was conducted with 18 studies meeting the inclusion criteria. Of these studies, 13 were RCT's and 5 were clinical trials. All 18 studies were included in the analysis, but only 15 were included in the meta-analysis due to missing data from three of the studies. The total number of children from grades 1 to 12 were

18,141. The length of the interventions ranged from 6 months to 3 years, and the physical activity differed in type, frequency, and duration. Fifteen of the studies had a co-intervention that included health or nutrition education components, while three consisted of physical activity only. The results of this meta-analysis found that there was no statistically significant change in BMI among the participants in the intervention group compared to the control group. The authors point out that the intensity of the physical activity was not documented in the studies and this could have impacted the outcome of the intervention. However, these findings can be viewed as an indicator that multi-behavioral interventions that include parent education are more effective than increased physical activity alone or physical activity combined with nutrition education.

Clinical Practice Guidelines

Two clinical practice guidelines (CPG) were included in this literature review initially. The first CPG (SIGN, 2003) was developed by relevant professional groups including physicians, nurses, psychologists, dietitians, economists, and research specialists. All recommendations were based on current evidence for best practice in the management of obesity in children up to the age of 18 years. The recommendations were presented at a national meeting attended by mothers of children who are obese, therefore patient views and preferences were sought. Final grade C and D recommendations for prevention and management of child and adolescent obesity include: increasing physical activity, decreasing physical inactivity (TV watching), encouraging a well balanced diet, needing family support for success, and managing obesity by maintaining weight while the child continues to grow taller rather than continuing to gain weight.

The 2006, Canadian CPG on the management and prevention of obesity in adults and children

(Lau et al., 2006) is the second CPG included in this literature review. The development group was identified as external stakeholders and experts who included representatives from academia, industry, government, and non-government officials. Final recommendations were made using a rigorous evidence-based approach. This was followed by an appraisal of the recommendations by an independent evidence-based review committee who assessed whether the assigned level of evidence reflected the strength of the existing literature. Grade A, Level 2 recommendations included: a reduced energy diet, regular physical activity, and reduced sedentary time, specifically screen time. In addition, this CPG recommended using family oriented behavior therapy in the treatment of obese children.

An updated review of the literature on February 20, 2011 rendered a third CPG, (SIGN, February 2010). The management of obesity national clinical guideline stipulated that it supersedes the SIGN 69, 2003 which is included in this review of the literature. Children and adolescents under the age of 18 years were included in the guidelines. Health surveys were assessed and determined that obesity among children/adolescents continued to increase from 32.4% in 2003 to 36.1% in 2008. There were three sections of the SIGN (2003) CPG that was updated by SIGN in 2010. The first is relevant to using BMI to define obesity. According to the guidelines, grade C recommendations stipulated that BMI percentiles is the best measure for diagnosing overweight and obesity among children and that utilizing waist circumference is not recommended as a tool for diagnosis. Furthermore, SIGN gives a grade D recommendation for not using the international task force cut-offs to diagnose overweight and obesity, rather recommends the use of $\geq 98^{th}$ percentile for obesity and the continued use of $\geq 91^{st}$ percentile for overweight. This differs from the CDC which recommends using $\geq 85^{th}$ percentile for overweight and $\geq 95^{th}$ percentile for obesity. One updated child obesity prevention grade C

recommendation of SIGN 2010 includes using sustainable school based interventions that encourages parent/family involvement. The final area with updated recommendations included treatment of obesity. SIGN (2010) offers grade B recommendations that overweight/obesity treatment programs should involve behavioral changes, be family based, and involve the parents. The overall aim, according to SIGN (2010) should be to change the lifestyle of the entire family and decrease dietary intake of high energy foods and sedentary time, while at the same time increasing physical activity.

Studies

To determine if reducing consumption of carbonated drinks can prevent excessive weight gain in children, James, Thomas, Cavan, and Kerr (2004) examined 644 children aged 7 – 11 years. This 12 month RCT took place in six primary schools in southwest England. Using a random number table, clusters were randomized with blinding to schools or classes. The intervention consisted of a one hour educational program for each of four terms that discouraged the consumption of carbonated drinks and encouraged a balanced diet. Outcome measurements included: height, weight, BMI z-scores, waist circumference, and the consumption of carbonated drinks recorded in a diary over three days at baseline and at the end of the study. The results of this study indicated no significant change in BMI. However, at 12 months there was a 7.5% increase in overweight and obese children in the control group, while there was a 0.2% decrease in the intervention group. Additionally, consumption of carbonated drinks decreased by 0.6 glasses in the intervention group compared to an increase of 0.2 glasses in the control group. Water intake increased equally in both groups. These findings suggest that decreasing the consumption of carbonated drinks could result in a decrease in weight gain. Contamination, though minimized by cluster randomization design, may have occurred due to transfer of

knowledge between participants outside the classroom. Furthermore, an attrition bias may have resulted since there were a high number of students that did not return the drink diaries.

In a qualitative study, Hesketh, Waters, Green, Salmon, and Williams (2005) sought child and parent views regarding social and environmental barriers to healthy eating and physical activity as well as acceptable foci and delivery methods for obesity prevention programs. A purposive sample of 136 included 119 children in grade 2 (aged 7–8 years) and grade five (aged 10–11 years), and 17 parents. The participants were selected from two government schools and one independent school in Victoria, Australia. Semi-structured focus groups were led by a research team member who used photo-based activities to initiate discussion. Parents also participated in a focus group. Comments, quotes, and observations of the groups were recorded and nine themes were extracted using grounded theory. Overall, the main findings in this study indicated that children and parents are aware of foods which are thought to be healthy, but receive contradictory information regarding what behaviors are considered healthy or unhealthy. For example, reading a book was stressed as important, but was considered sedentary behavior. Furthermore, contradictions about what constituted a healthy diet and physical activity choices were viewed as a barrier. Additionally, parents believed that healthy habits need to be established by parents prior to the child starting school. This supports the need for parent education as a component in obesity prevention and management.

To evaluate a health care based intervention to improve dietary habits, limit sedentary behavior, and increase regular physical activity, Patrick et al. (2006) conducted a RCT in a primary care setting with a home-based follow-up. The participants in the study included 878 adolescents aged 11–15 years recruited from six private clinics in San Diego, California. To improve diet and physical activity behaviors, a multimodal intervention was used. The Patient

Centered Assessment and Counseling for Exercise + Nutrition (PACE+) intervention consisted of a computer generated tailored progress plan addressing diet behaviors and physical activity. Once those in the intervention group completed the computer assessment, the health care provider received a summary highlighting areas of concern for each participant. Providers then spent 3-5 minutes counseling the adolescent and modifying the plan as needed. Each adolescent received a take home manual educating the participant about a specific targeted behavior identified on the assessment or about a behavior change strategy. Over the next 12 months, the participants received worksheets and tip sheets through the mail as well as eleven telephone counseling calls. Parents also received a manual to support the intervention elements. Participants randomized to the control group received a computer generated sun protection program with follow-up telephone calls. Outcome measurements taken at baseline, 6 months, and 12 months included: physical activity, dietary intake, sedentary behavior, height, weight, and BMI. The results indicated that the only significant difference for both boys and girls was improvement in sedentary behavior ($p < 0.001$). However, boys in the intervention group significantly increased their weekly physical activity compared to those in the control group ($p=0.01$). Additional findings indicated improvement in all other behaviors in both the intervention group and the control group, suggesting the possibility of a selection bias since all participants who signed up for the study may have had an interest in improving healthy behaviors. Another limitation was the use of self-report behavior measurements. Yet, in spite of the limitations mentioned, it is reasonable to believe the effects in this study are positive based on the rigor of the design.

In another single blinded 12 month RCT in Scotland (Reilly, 2006), researchers assessed whether a physical activity intervention would reduce BMI in 545 preschool aged (mean age 4.2

years) children. Secondary measures included: sedentary behavior, physical activity, fundamental movement skills, and evaluation of the process. Thirty-six nurseries were randomly selected and stratified to either the intervention or control group. The criteria for stratification included: type of nursery, size of nursery, and socioeconomic status of the area. The nursery intervention consisted of three, 30 minute, physical activity sessions per week. The home element of the study involved two components; a parent guide linking nursery and home physical play, and two educational leaflets encouraging less sedentary time and more physical activity. The study concluded that the intervention had no significant effect on BMI (at 6 month $p = 0.87$ and at 12 month $p = 0.90$), sedentary behavior ($p = 0.08$), or physical activity ($p = 0.18$). The fundamental movement skills of the children in the intervention group improved significantly more than the control group with the average difference being 0.8 units (SD 0.3 – 1.3 units), however p-values were not reported. Fundamental movement skills of girls improved more than boys ($p = 0.001$). The strengths of this study included the rigor of the design and the large number of nurseries participating. Conversely, a limitation of this study is that the physical activity component may not have been intense enough in young children to bring about a reduction in BMI. Additionally, the behavioral intervention by parents was not measured, therefore, it is not known to what degree this may have affected the outcome, whether positively or negatively. More research is needed utilizing the interventions in this study with the addition of a dietary component.

In two metropolitan teaching hospitals in South Australia, Golley and colleagues (2007) evaluated the effectiveness of parenting skills training for the treatment of overweight children. The single blinded, RCT evaluated two weight-management interventions. One intervention consisted of parenting skills training and intensive lifestyle education (P + DA), while the second

intervention was parenting skills alone (P). Each intervention group was compared with each other and with a control group for 12 months. Participants included 111 overweight children aged 6 to 9 years recruited through a newsletter and media publicity. The outcome variables were: BMI, waist circumference z-scores, height, and metabolic profile. The primary finding in the study was a reduction of BMI z-scores in all three groups: P+DA = 9%, P = 6%, & control = 5% ($p = 0.76$). Similarly, the BMI z-score increased over 12 months in 45% of the children in the control group as compared to that of the P+DA and P intervention groups with 19% and 24% respectively ($p = 0.03$). The waist circumference z-scores over 12 months were reduced in both intervention groups ($p = 0.03$) while there were no reductions in the control group. Though this study was not focused on gender differences, there was a significant reduction in BMI and waist circumference z-scores in boys ($p = 0.04$) as compared to that of the girls ($p = 0.02$). There were no significant group differences in metabolic health outcomes. The generalizability of the findings in this study is limited due to the apparent motivation of the control group (Golley et al., 2007), yet, the results support the potential impact that family weight management programs, including parenting education and physical activity, can have on overweight children.

In another RCT, Singh and colleagues (2007) studied 978 Dutch adolescents aged 12 – 13 years to determine whether a multi-component health promotion intervention would be effective in influencing body composition and aerobic fitness, and ultimately preventing weight gain. Eighteen secondary schools were randomly assigned to either an intervention or control group. The intervention utilized a program, DOIT, which was developed by the researchers. The DOIT program, consisting of an individual component and an environmental component, included 11 educational lessons aimed at increasing awareness and behavioral changes regarding energy intake and energy output. To facilitate behavioral change, additional physical education classes

were encouraged along with changes in the school cafeteria. The outcome measures were changes in body composition which included: waist and hip circumference, skinfold measurements, BMI, and aerobic fitness. At the end of the 8 month intervention period, BMI improved in both sexes in the intervention group as compared to the control group, though the changes did not reach statistical significance. Additionally, there were significant positive effects in waist-hip ratio in both boys and girls in the intervention groups. This was measured as mean standard deviation (SD) with -0.009 (-0.02 to -0.003) in girls and -0.006 (-0.01 to 0.000) in boys. The sum of skinfold thickness decreased significantly (mean SD -0.23 [-0.71 to 0.26]) in the girls in the intervention group, while there was an increase in the control group. Though not significant, other skinfold measurements noted a positive effect in both boys and girls in the intervention groups. Finally, there were no significant differences found in aerobic fitness among the intervention and control groups, however there was an increase among both boys and girls in the intervention group. Strengths of this study are that it was a RCT with a large sample size that could be incorporated into the existing curriculum of a secondary school. However, as pointed out by the authors, the fact that teachers at the school carried out the intervention could have resulted in a selection bias due to the demand placed upon them. Also, measuring aerobic fitness in this age group may be difficult. In spite of this, the results of this study support that a multi-component program is more effective than a single component program in preventing weight gain and managing overweight and obese adolescents.

In a RCT, Tsiros and colleagues (2008) examined the effectiveness of a cognitive behavioral therapy (CBT), CHOOSE HEALTH program, for improving body composition, diet, and physical activity in overweight and obese adolescents. Forty-seven adolescents aged 14-16 years were randomly assigned to either a CBT group or a control group. The CBT treatment consisted

of two, 10 week programs of one hour sessions weekly with the adolescent and his/her parents. The sessions were delivered by a psychology researcher at a nutritional research center in Australia. The first five sessions addressed improving diet and activity habits through behavioral strategies. This was followed by five weekly sessions with two of the sessions with the adolescent alone, to teach strategies to maintain new health behaviors through reframing unhealthful thoughts and problem solving. The second 10 week session was a maintenance program consisting of five phone calls. The results of the study were that there was a significant reduction in weight, BMI, fat mass, abdominal fat, and hip circumference ($p.<0.05$) in the CBT intervention group compared with the control group. Though not statistically significant, body fat and waist circumference was reduced in the CBT group as well. Also, a significant reduction of sugared soft drinks in the intervention group ($p <0.05$) was correlated with the reduction in BMI, weight, fat mass, hip and waist circumference at 10 weeks. Again, though not statistically significant, similar findings were noted at 20 weeks. There were no significant differences in physical activity between groups. In comparison, the participants in the control group had an increase in body fat and abdominal fat. One of the limitations of the study was an attrition rate of greater than 50%, making the final number of participants measured after the 20 week program very small (control n=8 and CBT group n=10) which weakens the internal validity of the study. Further limiting the generalizability of the findings was the improved healthy behaviors of the adolescents in the control group. Since the participants were volunteers who were interested in improving their lifestyles, they may have modified their behavior even though they were in the control group, indicating a possible Hawthorne effect. Therefore, the results might have been skewed with the control group not gaining as much weight as they would have otherwise.

Despite these limitations, the reduction in body composition leads one to believe that CBT could be effective in preventing and treating overweight and obesity in adolescents.

Similarly, using Cognitive Behavior Theory, researchers studied the feasibility of implementing the Creating Opportunities for Personal Empowerment (COPE) Healthy Lifestyles Thinking, Emotions, Exercise, and Nutrition (TEEN) program (Melnyk et al., 2007) with overweight adolescents. The COPE project consisted of two phases. Phase I trial used a pre-experimental design consisting of one small group of 11 overweight/obese teens in an urban high school. Phase II was a RCT pilot study consisting of a nine week intervention program involving 12 overweight teens in a suburban high school. Twenty-three subjects were recruited for both phases of the study using a convenience sample from two high schools in New York. Students were randomly assigned to either the COPE group or the control group. Measurements of weight and BMI were obtained at baseline and at the end of the 15-session program. The weekly COPE intervention consisted of 60-90 minute interactive sessions and included: role playing, cognitive behavioral skills building (CBSB) activities, and case-based examples to enhance behavioral skills learning. COPE participants completed journaling assignments between sessions to include goals and progress. Additionally, 20-30 minutes of physical activity was included in each COPE session. The COPE parent sessions involved four educational meetings informing parents about the content provided to their children and tips on how they could assist the teens in reaching their healthy lifestyle goals. The seven teens in the COPE intervention group in the suburban high school lost a total of 32 pounds during the nine week program compared to an 11 pound weight gain in the five teens in the comparison group. Six of the eleven teens who started the program in the urban city high school dropped out and none of the urban parents attended the sessions. Attrition was a problem in this study and is most likely due to the fact that the program was held

at the end of a school day when many students and parents have other responsibilities. A major limitation in this pilot study was the small convenience sample, which makes generalizability difficult. However, the fact that this was a feasibility study makes the small sample size understandable.

Again, using the COPE program and CBSB sessions, Melnyk et al., (2009) evaluated 19 Hispanic adolescents recruited from an urban high school in a southwest inner city. By flip of a coin, students in two health classes were selected to either receive the COPE program or attention control content 2 to 3 times a week over a 9 week period. The aim of the study was to evaluate the efficacy of the COPE program on healthy lifestyle beliefs and choices and the physical health of Hispanic adolescents. However, in addition, this study focused on the mental health as well, and evaluated the impact the COPE program had on anxiety, depression, anger, disruptive behavior, and self-concept. Seventeen students completed pre- and post-intervention data. Data analysis was evaluated using paired sample t tests to determine change over time. The results of the study concluded that COPE teens were less anxious and depressed, and more committed to making healthy lifestyle choices after the intervention than before. On the other hand, the students in the control group showed no improvement in anxiety and depression, but had similar changes in the commitment to engage in making healthy choices. Teens whose BMI was $\geq 85^{th}$ percentile were analyzed and found to have an increase in beliefs, healthy lifestyle choices, and nutrition knowledge, as well as a decrease in depressive symptoms. In addition, there was an increase in HDLs and a decrease in hemoglobin A1C and triglycerides among the COPE participants. BMI % and weight did not decrease during this study. Overall, the students liked the program and found it was helpful in coping with stress and anger, as well as helping them learn about healthy eating behaviors and exercise.

Synthesis of the Literature

Evidence found by the critical appraisal of three internally valid CPGs (SIGN, 2003, 2010; Lau, et al., 2006), six RCTs (Golley et al., 2007; James et al., 2004; Reilly 2006; Singh et al., 2007; Patrick et al., 2006; & Melnyk et al., 2007) and three systematic reviews (Flodmark et al., 2006; Summerbell et al., 2005; Kitzmann et al., 2010) supports the effectiveness of multi-behavioral interventions in the prevention and management of obesity in children and adolescents. Combined strategies including: healthier eating, increased physical activity, limiting sedentary time, and improved parenting skills were more effective than any single intervention alone. One RCT and a meta-analysis (Reilly et al., 2006; Harris, Kuramoto, Schulzer, & Retallack, 2009) found no effect on BMI with increased physical activity alone. This may have been related to the intensity of the physical activity alone, which was low intensity with very young nursery school children. Two RCT's (James et al., 2004; Tsiros et al., 2008) found that decreasing intake of sugared soft drinks decreased weight in adolescents, suggesting the negative impact of consuming high energy drinks. Only one RCT (Golley et al., 2007) found that combined dietary changes, increased physical activity, and health promotion counseling resulted in a decrease in BMI. Similarly, a reduction in hip and waist circumference and sum of skinfolds were noted in those programs that combined aerobic fitness and improved dietary behaviors (Singh et al., 2007). There is evidence from three RCT's (Melnyk et al., 2007; Melnyk et al., in press; Tsiros et al., 2008) that cognitive behavioral interventions with and without parental education is effective in weight loss. Additionally, Tsiros et al. (2008) noted a reduction in body composition and BMI as a result of the cognitive behavioral intervention. Similarly, Melnyk et al. (2009) found that a cognitive behavior skills building intervention is effective in improving healthy lifestyle beliefs and nutrition knowledge, as well as decreasing depression in teenagers. A qualitative study eliciting child and parent views regarding social and environmental barriers

to healthy lifestyle habits, (Hesketh et al., 2005) highlighted the fact that parents and children are aware of the importance of a healthy diet and physical activity. However, environmental and societal barriers prevent long term lifestyle changes to prevent obesity. Finally, one systematic review (Summerbell et al., 2005) found that current interventions to prevent obesity are not impacting the weight status of children to a great degree, yet combining dietary and physical activity interventions leads to small improvements.

A combination of a consistent healthy diet, decreasing sedentary behaviors, and increasing physical activity was found to improve overweight and obesity in children and adolescents. However, cognitive behavioral interventions that combine physical activity, limited sedentary time, consumption of a nutritious diet, and other cognitive skills with parenting education were more effective in weight management and prevention of obesity. It is important that these interventions begin during early adolescence to establish a habit that will carry over into adulthood. Adolescent obesity will continue to increase unless preventive measures are taken seriously and behavioral changes initiated. It is a challenge to healthcare providers, particularly those in school-based settings, to develop strategies aimed at behavioral changes resulting in a decrease in obesity among adolescents. Based upon these findings, the purpose of this project was to evaluate the impact of the creating opportunity for personal empowerment (COPE) healthy lifestyles thinking, emotions, exercise, and nutrition (TEEN) program in a rural high school health class on weight, BMI, BMI %, self-esteem in teens, healthy lifestyles behavior, beliefs, and perceived difficulty in engaging in healthy lifestyles behavior for teen and parents.

Congruence of Organizations Strategic Plan to the COPE Capstone Project

Congruent with the strategic plan of West Virginia high schools, the COPE Healthy Lifestyles TEEN program meets the definition of all eight Health Education Curriculum Standards set forth

by W.V. Legislative Rule (West Virginia Department of Education, 2008). These include: (1) Health Promotion and Disease Prevention, (2) Culture, Media, and Technology, (3) Health Information and Services, (4) Communication, (5) Decision Making, (6) Goal Setting, (7) Health Behaviors, and (8) Advocacy.

After implementation of an electronic health record (EHR) that measured BMI on every patient seen in a primary care clinic in central West Virginia, it was identified by this author that a large number of adolescents were overweight. Additionally, a growing number of teenagers were asking for information on weight loss. Furthermore, the incidence of chronic health problems among young patients, were increased in those who were obese. These concerns led to a review of the literature to support a practice change for weight loss among obese adolescents, and to prevent obesity in those at risk of becoming obese. As discussed previously in this paper, evidence found in the literature review supports the COPE Healthy Lifestyles TEEN program as an effective method in the prevention and treatment of overweight adolescents. The school administration and faculty were supportive of the COPE program as a curriculum change project (See Appendix B: Letter of Support).

Stakeholders

Stakeholders are those who stand to directly benefit from the implementation of the COPE project or those who stand to lose as a result of the project. Key stakeholders identified in this project included 9th grade participants at the high school, parents of the students, the school administration, the school board, school personnel, the community, funders, Minnie Hamilton Health Care Center, and the project leader.

Project Objectives

The objectives for the COPE program are presented in the SMART format: Specific, Measurable, Action-Oriented, Realistic, and Timed. These objectives are addressed during the evaluation portion of this proposal. For this project, there were seven main objectives. These included:

- ¾ 1. Teens will increase their healthy lifestyle behaviors after receiving the COPE TEEN program.
- ¾ 2. Teens will have stronger beliefs about the ability to engage in a healthy lifestyle after receiving the COPE TEEN program.
- ¾ 3. Teens will perceive living a healthy lifestyle as less difficult after receiving the COPE TEEN program.
- ¾ 4. Teens will increase the amount of time they participate in physical activities after completion of the COPE TEEN program.
- ¾ 5. Teens will have higher self-esteem by the end of the COPE TEEN program than at the beginning.
- ¾ 6. Teens involved in the COPE TEEN program who are overweight will lose weight.
- ¾ 7. Parents of teens participating in the COPE TEEN program will be able to identify ways to help their children achieve healthy lifestyle goals.

CHAPTER III METHODOLOGY

Project Design

This capstone project was designed to evaluate the effectiveness of the COPE intervention in a rural high school setting in central West Virginia. The Calhoun County Middle High School principal granted permission to incorporate the COPE Healthy Lifestyles intervention into the current health curriculum for ninth grade students during the 2009 fall school semester (See Appendix B: Letter of Support). The COPE sessions were conducted once a week for 15 weeks during the regularly scheduled health class. The health teacher was supportive of the curriculum change and was present in the classroom during the COPE sessions to assist as necessary and to ensure that the usual school flow was maintained. The COPE sessions began October 27, 2009 with each session lasting for the entire 60 minute class period. The school secretary and health teacher collected parent consent forms as they were returned to the school and all students agreeing to participate in the COPE program signed student assents prior to beginning the sessions. Students who did not participate in the project remained in the classroom. Some of these students actively listened to the sessions, while others engaged in other school work while the COPE sessions were held. The school nurse obtained and recorded a BMI (using a standard calculation based on height and weight) on all ninth grade students participating in the COPE program at baseline and at the end of the program. BMI % was calculated pre- and post-intervention on each participant using the CDC growth charts. BMI results were kept locked in the school nurse's office until completion of the program.

Measurements/Instruments

All measurements were obtained at the beginning and end of the COPE program. Anthropometric measurements included height, weight, and BMI. Other measurements obtained through self report questionnaires included Healthy Lifestyle Teen Behaviors, Healthy Lifestyle Teen Beliefs, Perceived Difficulty in leading a healthy lifestyle for teens (Melnyk et al., 2007) Self-Esteem of teen participants (Rosenburg, 1989), and Healthy Lifestyle Behaviors (activity) of parents, Healthy Lifestyle Beliefs of parents, and Perceived Difficulty for parents (Melnyk et al., 2007). In addition, each teen and parent participant were asked to complete an exit questionnaire consisting of five open-ended questions about his/her perception of the overall COPE program (See Appendix C: Exit Questionnaire).

The Healthy Lifestyles Behavior Scale for Teens (See Appendix D) measured the behavior of the teen participants (B. Melnyk, personal communication, 2009). This 16-item instrument, developed by researchers who created the COPE Healthy Lifestyles TEEN intervention utilizes a 5-point Likert scale to answer questions, such as “I exercised regularly”, or “I talked about my worries or stressors.” Eight adolescent health experts established content validity while face validity was established with 10 teens (B. Melnyk, personal communication, 2009). Construct validity has been supported through factor analysis (Melnyk, 2007). This measure was administered at baseline and at the end of 15 week intervention.

The Healthy Lifestyles Beliefs Scale (ED) measured the teens’ beliefs about their ability to lead a healthy lifestyle (B. Melnyk, personal communication, 2009). This is a 16- item instrument, measured on a 5-point Likert scale in answers ranging from 1- strongly disagree to 5- strongly agree. This questionnaire relates to ones beliefs about maintaining a healthy lifestyle, such as ‘I believe I can be more active”. Again, face validity was established with 10 teens and

content validity by eight adolescent experts. Factor analysis with more than 400 high school adolescents supported construct validity (B. Melnyk, personal communication, 2009). Cronbach alphas with prior samples have typically been above .88. HLBS was obtained at baseline and at the end of the program.

The Healthy Lifestyle Perceived Difficulty Scale (See Appendix F) was utilized to measure the teens' perceived difficulty of leading a healthy lifestyle. This instrument, similar to scales used in previous studies, was adapted for use by the authors of the COPE Healthy Lifestyles TEEN Program (Melnyk et al., 2007). The teen participants responded to items on a 5-point Likert scale ranging from 1-very hard to do to 5-very easy to do (example: eating healthy or exercising regularly). Construct validity was supported in previous studies of 400 high school adolescents using factor analysis (Kelly, Melnyk, Jacobson, & O'Haver, in press). Cronbach alphas have typically been above .85 with prior samples.

A self-report log (See Appendix G) along with a pedometer was issued to each student to measure the participants' physical activity. Self-report diaries have been found to have limitations; however, use of a pedometer to track steps can objectively quantify the participant's physical activity.

The Rosenburg Self-esteem Scale (See Appendix H) was used to measure the teen's self-esteem. This scale, developed in 1965 by Morris Rosenberg, (Rosenberg, 1989), is a 10 item instrument that utilizes a 4-point Likert scale ranging from 0-strongly disagree to 3-strongly agree. Construct validity was supported in a study in the 1960's (Rosenberg, 1989) consisting of 5,024 high school juniors and seniors from 10 randomly selected schools in New York.

Weight was measured using standard digital scales at the beginning and end of the curriculum change. Measurements were obtained with the participant being in light weight clothes without shoes. BMI and BMI % was calculated in a usual manner using height and weight by the school nurse.

Parent measures were obtained using the Healthy Lifestyle Behaviors (Activity) Scale, (See Appendix I) the Healthy Lifestyle Beliefs Scale for parents (See Appendix J), and Healthy Lifestyles Perceived Difficulty Scale (See Appendix K). Parents were asked to complete the same exit questionnaire as that of the students. Descriptive statistics were not completed on the parents as originally planned because of the small number of responses and at the suggestion of the school system.

Curriculum

The COPE Healthy Lifestyles TEEN program consisted of 15 educational and cognitive behavior skills building (CBSB) sessions. The CBSB sessions were delivered by a nurse practitioner or a trained registered nurse during one 60 minute period each week. The program was incorporated as part of the regular 9th grade health class in a rural high school in West Virginia. Each weekly class involved 30 minutes of education and CBSB, followed by 20 minutes of physical activity. Weekly COPE program topics focused on a different aspect of healthy lifestyle behaviors as well as cognitive skills aimed at assisting adolescents in making healthy choices and positive decisions regarding healthy living. The participants had homework assignments to complete and bring back to class each week.

The physical activity component included activities that got the students moving (dance, walking, low impact aerobic, tug of war, twister games, dodge ball, etc.). In addition to the 20

minute weekly physical activity during health class, each participant was given a pedometer and asked to record time spent walking. The students were educated on the proper use of the pedometer. This was reinforced weekly to assure that they were wearing them and recording their steps. Each participant was encouraged to increase this amount by 10% each week during the COPE program.

Interventions involving a parent education component have been found to be more effective in obesity prevention and management than those not involving parents (Flodmark et al., 2006; Golley et al., 2007; Melnyk et al., 2007; Tsiros et al., 2008); therefore, a parent education component was included in the COPE program. The parents of each 9th grade student were mailed an educational fact sheet before the program began informing them of the addition of the COPE program in the regular health class curriculum and the content of the program. Parents received a newsletter with tips for healthy lifestyle changes that the entire family could make, and how parents could assist their adolescent in reaching and maintaining their healthy lifestyle goals. The newsletters were mailed at four week intervals during the intervention period. Parents were asked to complete the Healthy Lifestyle Beliefs Scale, Healthy Lifestyle Behaviors Scale, and the Healthy Lifestyles Perceived Difficulty Scale for parents at the beginning and end of the program. As previously noted, these confidential questionnaires were mailed to the parents and were coded so the data could be analyzed to determine if there is a change over time.

Timeline of Project

The timeline for the COPE capstone project included five phases:

Phase one began at the inception of the capstone project and concluded with IRB approval. Included in the tasks accomplished during phase one were: (a) review and synthesis of the

literature, (b) needs assessment, (c) budget development, (d) writing the proposal, (e) CITI training, (f) Capstone Committee approval, and (g) IRB approval of capstone project. This phase was expected to be completed by August, 2009, but was not completed until October, 2009.

Phase two of the capstone project began after approval of the project by the IRB and involved all aspects of the capstone project necessary to complete prior to implementing the project. Meetings with key stakeholders to gain support of the project were accomplished during this phase as well as other pre-implementation tasks. The activities included in phase two were: (a) obtaining an Affiliation Agreement, (b) completing and receiving a grant from the Sisters of St. Joseph, (c) nurse practitioner COPE training, (d) preparation of materials needed for the project including COPE teen participant books, COPE parent newsletter/tips sheets, purchasing pedometers printing questionnaires, and tools used for measurements, (e) completing the curriculum plans with the health class teacher, (f) COPE training for the school nurse, the registered nurse, and health teacher, and (g) frequent meetings with the site mentor (the high school principal) to assure all tasks were accomplished prior to the start date of the project.

Phase three began with the implementation of the COPE project beginning October 27, 2009 and ended with the completion of the COPE intervention March 17, 2009. Tasks completed during this phase included: (a) baseline measurements, (b) 15 weeks of COPE sessions, (c) 20 minutes of physical activity during each COPE session, (d) mailings of parent newsletter/tips sheet, (e) measurements at end of COPE sessions, and (f) completion of exit questionnaires by COPE teens and parents. Due to unexpected time constraints, there was a time lag of two months between the time planned to begin and the actual implementation date.

Phase four was the evaluation phase. During this phase, the nurse practitioner: (a) analyzed the data obtained during the COPE project, (2) completed the evaluation of the COPE intervention health class curriculum change, (c) prepared a report for all stakeholders, and (d) completed the written capstone paper.

Phase five, the final phase of the COPE project, is the dissemination phase. This phase brings the project to an end and includes: (a) presentation of the COPE capstone project to the Capstone Committee and West Virginia University School of Nursing Faculty in partial fulfillment of the DNP Degree, (b) meetings with school personnel to assist in the development of the COPE curriculum as part of the future health classes at the high school, and (c) preparation for future presentations of the COPE project at national conferences, and (d) preparation of manuscripts for publication.

Resources

To teach the COPE curriculum, the nurse practitioner delivering the 15 weekly CBSB sessions required training. The original COPE designer team trained the author of this capstone project prior to the start of the program. The training included: (a) background on CBSB and the Cognitive Behavior Theory as it relates to the COPE program, (b) review of the COPE sessions for students and parents, and student homework assignments, (c) learning the role playing to be utilized in the skill building sessions, and (d) review of the self report diary after the intervention during each classroom session. The COPE training was delivered by phone conversation and via email as well as self-study of the COPE leader handbook.

To implement the COPE capstone project as a health class curriculum change, it was necessary to weave the COPE sessions into the current curriculum. This was accomplished

through meetings with the school principal and health class teacher. A copy of the COPE book was distributed to both the principal and teacher once approval for the project was obtained. Other support staff needed included the school nurse and a second registered nurse to assist in data collection and measurements, as well as the school secretary to help with supplying address labels for the COPE parents. Other supplies necessary for the program included printing the COPE booklets and questionnaires which was accomplished by the staff of Minnie Hamilton Health System, the local Rural Primary Care Clinic/Critical Access Hospital. Pedometers, log books, printing paper, stamps, and envelopes were purchased and stored in the clinic until needed at the school on the day the program was implemented.

Space for the COPE program was not a problem since the COPE sessions were held during the regular school day during health class. The classroom was set up in a manner to facilitate 20 minutes of physical activity during each COPE session. All the chairs were moved against the wall when activities took place in the classroom, while other activities were held in the gym. On days the weather permitted, the exercise component of the program was held outdoors on the school grounds. The sound system for the music was provided by the NP project leader.

Financial Plan/Budget

A detailed budget was developed for this capstone project (See Appendix L). The total cost of the project was projected to be obtained through grant funding that was received from the Sister of St. Joseph's Charitable Fund Program whose focus is improving health care to rural communities. The total cost of the COPE project was $1750, of which $1500 was grant money. The largest cost was that of the COPE student books.

Key Site Support

Support for an intervention for the prevention and management of adolescent obesity at Calhoun County High School has been ongoing since the discussions began in early 2008 while conducting a needs assessment. Strong support and buy in for the COPE capstone project was offered by the CEO of the Minnie Hamilton Health Systems, the Principal of Calhoun County High School, the health teacher, and the school nurse. In speaking informally to current high school students, the COPE project was welcomed by the students. A letter of support was written by Karen Kirby, Principal Calhoun County High School (See Appendix B).

Planned Evaluation

The evaluation of the COPE capstone project is important to determine if the objectives were met and was used to measure the overall success of the program. Findings from the evaluation were used to determine if there are any changes in the program that may need to be made to assure its sustainability. The evaluation is based on the objectives of the COPE program previously discussed in this paper.

The first objective was that the COPE intervention will lead to improved healthy lifestyle behaviors by the participants. This was measured using the Healthy Lifestyle Behavior Scale at baseline and at the completion of the program by a paired sample t-test. Students were assigned code numbers that were recorded on their instruments so that the paired sample t-test could identify change over time.

The second objective was that COPE participants would develop a stronger belief that he/she had the ability to engage in a healthy lifestyle. This was measured, using the Healthy Lifestyle Beliefs Scale at baseline and at the completion of the program by a paired sample t-test.

The third objective was that the COPE teen participants would perceive living a healthy lifestyle as being less difficult to engage in after the intervention as measured by the Perceived Difficulty Scale for Teens. This was measured at baseline and at the completion of the program using a paired sample t-test.

The fourth objective was that COPE teen participants would increase the amount of time he/she participated in physical activity. Content analysis of a self-report diary and a pedometer log was planned to be used as the means to measure this objective. In addition to this, the project leader planned to use a paired sample t-test to measure the pedometer records used to track steps during the program. However this was not accomplished as the students lost their pedometers, did not wear them, or broke them during the first few weeks of the program. Initially, these were replaced; however this became a weekly problem with most students not using the pedometers. The students were asked each week to record the steps they had taken, but there was minimal data recorded. Therefore, due to the overwhelming amount of missing data, this part of the planned evaluation is not reported in this paper.

Objective five, COPE teen participants would have a higher self-esteem by the end of the program, was measured using the Rosenberg Self-Esteem Scale and a paired sample t-test. Measurements were obtained at the beginning and at the completion of the program.

The sixth objective for the COPE capstone project was that COPE teen participants who were overweight would lose weight. Weight, BMI, and BMI % was measured at the beginning and at the completion of the COPE program using a standard set of scales and a standard BMI calculation.

The seventh objective was that parents of the COPE teen participants would learn ways to help their children achieve healthy lifestyles goals. Parents of the COPE teen participants were asked to complete the parent's Healthy Lifestyles Behaviors, Beliefs, and Perceived Difficulty at baseline and after the 15 session intervention period. A paired sample t-test was used to measure these questionnaires.

Finally, students and parents completed an evaluation of the program at the end of the COPE sessions. This information offered feedback as to how the program was helpful from the students' and parents' perspectives. Confidentiality was maintained by using code numbers on the evaluation forms. The master ID codebook was kept locked in a file drawer throughout the project and only viewed by the project leader when entering coded data to measure change from time one to time two.

In addition, demographic data were collected. Descriptive statistics were used to examine demographic data for age, gender, and ethnicity. There was no demographic data collected on the COPE parents.

In conclusion, as previously discussed in this paper, the COPE Healthy Lifestyles TEEN program had been found to be effective in improving adolescent obesity (Melnyk, 2007) but was never tested with a rural population. Thus this intervention was utilized to evaluate the effectiveness of a health class curriculum change in a rural high school. The objectives of this capstone project were clearly defined and the tools utilized to measure the objectives are supported in the literature as valid and reliable

CHAPTER IV RESULTS

Demographics

The total number of students in the ninth grade health class at the time the COPE program began on October 20, 2010 was 71. Of that total number, 64 (90%) of the students signed assents, while 55 (86%) of those students parents returned parental consent forms. Therefore, the final sample size at the start of the COPE program was 55 students. There was an attrition rate of 10.9% with a total of 6 students dropping out of the program, thus 49 (89%) students completed the COPE intervention with pre and post intervention measurements obtained. Two students were dismissed from the regular high school due to behavior issues, two students moved out of the county, and two students dropped out because they did not want to continue to participate in the program. The mean weight of the participants at baseline was 152.32 pounds (SD=39.98), with a range from 94 to 280. The mean BMI of the sample was 25.07 (SD=5.64) with 52.8% falling $\geq 85^{th}$ percentile, indicating that more than half the students enrolled in the COPE program were overweight or obese when the program began. The mean BMI % was 76.92. Of the 49 students who finished the COPE program, 57.1 % (n=28) were female while 42.9% (n=21) were male (Table 1). The age of the students ranged from 14–19 years with the mean age being 14.67 years. Participants were 98% Caucasian (n=48) and 2% Latino (n=1). The return rate of completed questionnaires from parents was 46% (n=25) for Time 1 and 25% (n=12) for Time 2. Because this program involved a curriculum change in the health class, only demographics of the students was attainable, therefore there is no demographic information on the parents.

Table 1. COPE Teen Participants Characteristic Demographics

Characteristic	Count	%
Gender (n=49)		
Female	**n=28**	**57.1 %**
Male	**n=21**	**42.9 %**
Race (n=49)		
Caucasian	**n=48**	**98.0 %**
Latino	**n=1**	**2%**
Age (n=49)		
14 years	**n=21**	**42.9 %**
15 years	**n=26**	**53.1 %**
16 years	**n=1**	**2.0 %**
19 years	**n=1**	**2.0 %**
Baseline Weight Status (n=49)		
Underweight	**n=0**	
Normal Weight	**n=20**	**46.9%**
Overweight	**n=14**	**25.5%**
Obese	**n=15**	**27.3%**

Results from Pre- and Post- Test

SPSS 18 was used to analyze the data. Paired sample T-tests were used to determine change over time from Time 1 to Time 2 for weight, BMI, BMI %, self-esteem, and healthy lifestyles in teens and parents. There was a statistically significant difference in the healthy behavior teen scores from Time 1 (M=51.32, SD=11.15) to Time 2 (M=57.45, SD=9.71), t (43) 3.93, p=.000 (two-tailed). The mean difference in the students' healthy behaviors was 6.136 with a 95% confidence interval ranging from 9.28 to 2.99. These results indicate that the students' healthy lifestyle behaviors improved during the 15 week COPE program. In addition to this, there was a statistically significant difference in self-esteem of a sub-group of eight teens with low self-esteem at baseline. Self-esteem scores improved from Time 1 (M=20.41, SD=5.98) to Time 2 (M=21.54 SD=5.63) p=.010 with an effect size of 1.48. Though no other findings were significant, there was improvement in BMI, BMI %, teen's healthy lifestyle beliefs and

perceived difficulty, as well as parent's healthy lifestyle behavior, beliefs, and perceived difficulty.

Anthropometric Measurements

During the 15 week COPE program, 23 students (47%) lost weight, 23 (47%) gained weight, and three students (6%) maintained the same weight (Table 2). Total weight loss among the 23 students who did lose was 143.6 pounds (M=6.92) while the total weight gain was 150.4 pounds (M=6.15). The range of weight loss was .2 to 34.2 pounds and the range for weight gain was .2 to 17.2 pounds. There were no statistical differences in BMI from Time 1 (M=25.07, SD=5.64) to Time 2 (M=24.78, SD=5.87, p=.189). However, there was slight improvement in the overall BMI with a mean difference of .285, p=.189. More specifically, BMI % was calculated on each student using the CDC growth charts for age and weight. The BMI variable was then re-coded to the following categories: Category 1: underweight (BMI< 5th percentile), Category 2: healthy weight (BMI 5th percentile to < 85th percentile), Category 3: overweight (BMI 85th to < 95th percentile), and Category 4: obese (BMI 95th percentile and above). Seven students' BMI improved. Of those, four students changed from Category 3 (overweight) to Category 2 (healthy weight), while three moved from Category 4 (obese) to Category 3 (overweight). Only one student had an increase in BMI, moving from Category 2 (healthy weight) to Category 3 (overweight).

Table 2. Anthropometric Measurements

Weight	Count	Percent	Total Pounds	Range
Lost Weight	**n=23**	**47%**	**143.6 M=6.92**	**.2 – 34.2**
Gained Weight	**n=23**	**47%**	**150.4 M=6.15**	**.2 – 17.2**
Weight Unchanged	**n=3**	**6%**	**NA**	**NA**

Table 2 continued

Percentile Category	Time 1 Count	Time 1 Percent	Time 2 Count	Time 2 Percent
Category 1 (Underweight)	**0**	**NA**	**0**	**NA**
Category 2 (Healthy Weight)	**20**	**40.8%**	**23**	**46.9%**
Category 3 (Overweight)	**14**	**28.6%**	**14**	**28.6%**
Category 4 (Obese)	**15**	**30.6%**	**12**	**24.5%**

Healthy Lifestyles Student Questionnaires

Three healthy lifestyles student questionnaires were analyzed using a paired sample t-test pre- and post-intervention (Table 3). As previously noted, only the healthy lifestyle behaviors result was statistically significant, however the mean score of each pair of healthy lifestyles questionnaires revealed that the students showed a positive difference. The student healthy lifestyle beliefs score increased from Time 1 (M=62.65, SD=10.07) to Time 2 (M=64.63, SD=9.15), p=.145, indicating that the students belief that they could actively live a healthy lifestyle improved after participating in the COPE program. Likewise, there was a slight decrease in healthy lifestyles perceived difficulty score from Time 1 (M=23.53, SD=1.10) to Time 2 (M=23.13, SD=1.12) p=.684. (Table 3). The perceived difficulty scores were reverse scored, therefore a decrease indicates that the student perceived living a healthy lifestyle as less difficult after the COPE program than before the program. Forty-four of the student participants completed all pre-and post- questionnaires.

Table 3. Healthy Lifestyles Student Questionnaires (perceived difficulty reverse scored)

Questionnaire	Time 1 Count	Time 1 Mean	Time 1 SD	Time 2 Count	Time 2 Mean	Time 2 SD	Sig. (two-tailed)	Effect Size
Healthy Lifestyle Behaviors	**n= 44**	**51.32**	**11.15**	**n=44**	**57.45**	**9.70**	**.000**	**.58**
Healthy Lifestyle Beliefs	**n=46**	**62.65**	**10.07**	**n=46**	**64.63**	**9.15**	**.145**	**.56**
Healthy Lifestyle Perceived Difficulty	**n=46**	**23.52**	**7.46**	**n=46**	**23.13**	**7.61**	**.684**	**.63**

Healthy Lifestyles Parent Questionnaires

Twelve parents/guardians completed both pre- and post-intervention questionnaires. Again, using a paired sample t-test, the three parent questionnaires were analyzed to determine if there were differences from Time 1 to Time 2 in healthy lifestyle behaviors, beliefs, and perceived difficulty (Table 4). Though not statistically significant, there was an increase (M=3.92, SD=8.40) in the parent's healthy lifestyle behavior from Time 1 (M=29.25 SD=8.66) to Time 2 (M=33.17, SD=9.60) p=.135. Similar results were noted in parent's healthy lifestyles beliefs with an increase between Time 1 (M=58.83, SD=11.09) and Time 2 (M=62.67, SD 9.09) p=.203. The healthy lifestyles perceived difficulty questionnaire for parents noted the greatest difference. There was decrease in perceived difficulty from Time 1 ((M=40.58, SD=8.08) to Time 2 (M=36.08, SD=7.87) p=.146. There were no statistically significant differences in the parent's healthy lifestyle from baseline to the end of the 15 week intervention program. However, there was improvement in healthy lifestyles behavior, belief's, and perceived difficulty indicating that the COPE program was effective in meeting COPE objective seven.

Table 4. Healthy Lifestyles Parent Questionnaires

Questionnaire	Time 1 Count	Time 1 Mean	Time 1 SD	Time 2 Count	Time 2 Mean	Time 2 SD	Sig. (two-tailed)	Effect Size
Healthy Lifestyle Behaviors	**n=12**	**29.25**	**8.66**	**n=12**	**33.17**	**9.60**	**.135**	**.43**
Healthy Lifestyle Beliefs	**n=12**	**58.83**	**11.09**	**n=12**	**62.67**	**9.09**	**.203**	**.38**
Healthy Lifestyle Perceived Difficulty	**n=12**	**40.58**	**8.08**	**n=12**	**36.08**	**7.87**	**.146**	**.56**

Student Self-Esteem Questionnaire

The Rosenberg self-esteem questionnaire was completed by the students at the beginning and end of the COPE curriculum change intervention. The range in scores for this scale is 0–30 with

30 being the highest. Over-all self-esteem of the teens improved from Time 1 (M=20.41, SD=5.98) to Time 2 (M=21.54, SD=5.63), but the improvement was not statistically significant. However, there were eight students who had a low self-esteem score of less than 15 at the beginning of the program. When analyzed as a sub-group, there was a statistically significance increase in the self-esteem scores from Time 1 (M=12.25, SD=1.16) to Time 2 (M=18.88, SD=4.794), p=.010 with an effect size of 1.48.

Table 5. Rosenburg Self-Esteem Questionnaire

	Time 1			Time 2			Significance		Effect
Questionnaire	**Count**	**M**	**SD**	**Count**	**M**	**SD**	**M**	**p Value**	**Size**
Self-Esteem	**n=46**	**20.41**	**5.98**	**n=46**	**21.54**	**5.63**	**1.13**	**.671**	**.19**

Table 6. Self-Esteem Sub-Group (Students with a Low-Esteem Score at Baseline)

	Time 1			Time 2			Significance		Effect
Questionnaire	**Count**	**M**	**SD**	**Count**	**M**	**SD**	**M**	**p Value**	**Size**
Low Self-Esteem	**n=8**	**12.25**	**1.16**	**n=8**	**18.88**	**4.79**	**6.62**	**.010**	**1.48**

Self-report Physical Activity/Pedometer Results

There was not enough data to analyze because students forgot their pedometers, lost them, or broke them; therefore they could not log the steps they walked each week. Initially, the pedometers were replaced; however there were 5 to 10 students needing another pedometer in every session. Therefore, this portion of the COPE project was discontinued. However, during each weekly session, students were reminded to continue to increase their steps and decrease sedentary time. Several students reported that they had started walking in the evenings with their parents while others reported starting an exercise program. At the conclusion of the program, two students were meeting after school three times per week to walk 3 miles.

Open-Ended Exit Questionnaire

Qualitative data were analyzed using the five question exit questionnaire. The student post-intervention exit questionnaires were analyzed to determine recurring themes. Word repetition was used to identify words or phrases that recurred or were repeated in the answers. If a specific answer was repeated two or more times, it was considered to be a recurrent theme.

Question One: Was the program helpful? If so, please describe what you found helpful.

Six recurrent answers/themes:

"Yes" "It helped me to know how to eat healthier" (n=19)

"Yes" "It taught me about portion control" (n=5)

"Yes" "How to deal with my anger problem (so I don't get myself in jail or in trouble)" (n=4)

"Yes" "It taught me how to deal with stress" (n=4)

"Yes" "It helped me to start moving/helped me start exercising regularly" (n=4)

"Yes" "I most liked learning the traffic light diet" (n=3)

Question Two: What did you like most about the program?

Seven recurrent answers/themes emerged:

"I most liked the activities/games/exercise" (n=29)

"Learning about portion control" (n=3)

"Learning how to live a healthy lifestyle" (n=3).

"Getting out of regular class" (n=3)

"Learning about the importance of exercise" (n=3)

"Knowing that someone cared about us students" (n=2)

Question Three: Would you recommend this program to a friend? If yes, why or why not?

Seven recurrent answers/themes:

Yes (n=48)

"It teaches you how to live a healthy lifestyle and helps you make healthy choices" (n=15)

"Because it is educational" (n=8)

"Because it is so fun" (n=5)

"It is a good program" (4)

"It helps you lose weight or maintain weight" (n=3)

"It helps you think positive" (3)

"Because all my friends would appreciate the attention they would get from this program" (n=1)

Question Four: How could participation have been made easier for you?

Six recurrent answers/themes emerged:

"Nothing, it was already easy (n=10)

"More games, more time in the gym, and more exercise" (n=9)

"I don't know" (n=8)

"Less reading and not have to fill out so many surveys" (n=2)

"Give away more prizes" (n=1)

"To help me wake up in the morning (n=1)

Question Five: Would you like to participate in a similar program in the future?

Yes = 39

No = 6

Maybe = 3

I don't know =1

CHAPTER V SUMMARY, DISCUSSION, IMPLICATIONS

Congruence with Theoretical Frameworks

The theory of planned behavior (TPB) and the cognitive behavior theory (CBT) were used as the theoretical frameworks to develop the COPE Healthy Lifestyles TEEN curriculum change for a rural 9th grade health class. One main concept of the TPB is that an individual's belief system is the basis for one's behavior. By the time an adolescent enters high school, behaviors, whether good or bad, have been established. Unfortunately, these behaviors often include poor dietary habits, lack of physical activity, and sedentary lifestyle. With national attention focusing on the obesity epidemic, it is well known that these behaviors are linked to adolescents becoming overweight. To change unhealthy behaviors, adolescents must believe in or have a positive attitude toward engaging in a healthier lifestyle and view it as important. One aspect of the COPE program is to help adolescents develop a strong belief that they can be successful in living a healthy lifestyle. Healthy lifestyle beliefs improved in 53% of the COPE Healthy TEEN program participants. With a stronger belief in the ability to live a healthier lifestyle, combined with lower perceived difficulty, there was a statistically significant difference in healthy lifestyle behaviors in participants in this COPE program. In addition, normative beliefs, a concept of the TPB, are influenced by those in one's social circle (Aizen, 1985). Incorporating the COPE program into the regular health class setting where the students were among peers prevented singling out those that were overweight or whose unhealthy behaviors were apparent. Involving peers and parents helped to strengthen the motivation to engage in healthy lifestyle behaviors as adolescents often conform to peer pressure, while at the same time trying to please their parents by doing what they think they would want them to do.

Similar to the TPB, the underlying premise of the CBT is that the way an individual feels and thinks plays a major role in his/ her behavior. In other words, if the adolescent has a positive attitude or thinks and feels that a particular behavior or change in lifestyle is important, then they are more likely to engage in the behavior. The major component of the COPE Healthy Lifestyles TEEN program involved weekly Cognitive Behavior Skills Building Sessions (CBSB) focusing on making healthy choices. The CBSB sessions included topics such as: self-esteem and positive thinking, overcoming barriers, stress and coping, dealing with emotions, and effective communication. The aim of the CBSB sessions was to teach the students the skills and impart the knowledge necessary to make healthy lifestyle choices, ultimately leading to feeling, thinking, and behaving positively. For those who were overweight or obese, changing the health class curriculum to include the COPE program led some of the participants to weight loss and/or helped them to maintain a healthy weight, as was evident in this capstone. Seven students lowered their BMI percentile, three from obese to overweight and four from overweight to a healthy weight, compared to only one student whose BMI percentile increased from healthy weight to the overweight category.

Discussion

The purpose of this capstone project was to evaluate the impact of the COPE Healthy Lifestyles TEEN program on a 9th grade health class in a rural high school. Anthropometric, healthy lifestyles, and self-esteem outcome measures were examined to determine the effectiveness of the COPE program. Specifically, the outcomes of interest included: weight, BMI, BMI %, self-esteem (students only), physical activity, and healthy lifestyles behavior, belief, and perceived difficulty (students and parents). Students and one parent's evaluation of

the program were examined by means of an open-ended questionnaire to determine how the participants felt the program helped them and what they found helpful.

Weight

Twenty-three students lost a total of 143.6 (M=6.92) pounds during the COPE program, while 23 teens had a combined weight gain of 150.4 (M=6.15) pounds. The remaining six teens maintained the same weight. The most weight lost in a single teen was 34.2 pounds and the most gained was 17.2 pounds. This occurred over a period of 22 weeks. One explanation for the weight gain may have been the fact that school was cancelled a total of 17 days due to snow, while six other days had 2-hour delays. As a result, there were some weeks that the CBSB sessions were not conducted. During these weeks of no school, the students were exposed to the home environment all day, often unsupervised, while parents were at work which may have led to the consumption of more calories than usual, and ultimately may have caused weight gain in some students. Similarly, because the COPE intervention started later in the semester than planned, the CBSB sessions were interrupted by two major holidays, Thanksgiving and Christmas. In addition to the weeks off school related to weather, there was a seven day break for Thanksgiving and a two week break for Christmas. It is well known that tradition often leads to eating more than usual during the holiday season, again exposing the students to the risk of weight gain related to higher calorie intake. It is feasible that students who had set healthy lifestyle goals during health class, and whose parents supported the goals, were more equipped to make healthy choices and avoid weight gain during the school breaks.

The student who lost 34.2 pounds was a male who was very motivated. He had already recognized that he was overweight and had made a decision to lose weight prior to the start of the COPE program. However, it is reasonable to believe that the COPE program offered him and

his parent a tool to assist in his weight loss efforts. Interestingly, among the teens who gained weight, most were overweight or obese. One reason for this may be that those who have a lot of weight to lose to be in a healthy weight category, do not have a positive attitude and strong belief that engaging in a healthy lifestyle will have a positive outcome, so they are not motivated to change behaviors. Furthermore, low self-esteem has been linked to obesity (Edmunds, Waters, & Elliot, 2001; USDHHS, 2007). Another consideration in determining why some students gained weight is that it is not known what was going on in these teen's personal lives which could result in weight gain particularly if the teens were depressed or had anxiety. According to Melnyk, et al. (2009), teens with negative moods are more likely to have less healthy lifestyle beliefs and behaviors as well as make less healthy choices. In addition, since there were no parent demographics included in this study, it is not known if the parents of these teens are overweight, which could then imply a genetic link.

BMI and BMI Percentages

Though not statistically significant, there was a reduction in BMI and BMI percent among the COPE students. In fact, seven students changed from obese to overweight or overweight to healthy weight based on CDC growth chart guidelines. Kitzmann et al. (2010) reported in a meta-analysis that the length of time that interventions were held did not impact the effectiveness. Yet, for BMI and BMI % to decrease, enough weight loss must occur or the individual must grow taller in order to see a noticeable difference. The COPE program lasted 22 weeks, but included the weeks the school was closed due to snow and the holiday breaks. As previously discussed in relation to weight loss, having the program run during these major holidays where more calories are likely to be consumed could impact the outcomes. However, it is important to identity that interventions are effective in spite of these kinds of barriers as the

reality is that these occurrences are common and must be considered in finding effective strategies to prevent and treat adolescent obesity in light of these.

Healthy Lifestyle Teen Behaviors, Beliefs, and Perceived Difficulty

The findings from this capstone project suggests that the COPE Healthy Lifestyles TEEN program is an effective school based intervention and has a positive impact on healthy lifestyles among rural high school freshmen. There was a statistically significant increase in healthy lifestyle behaviors in the COPE participants. Furthermore, adolescents who received the COPE program had stronger beliefs in their ability to live a healthy lifestyle, as well as perceiving it to be less difficult to do after completing the program. The COPE program centers around cognitive behavioral skills building sessions. Cognitive behavioral interventions have been found to be an effective strategy in the management of obesity among adolescents (Melnyk et al., 2007; Melnyk et al., in press; Tsiros et al., 2008; Melnyk et al., 2009; SIGN, 2010). The COPE Healthy Lifestyle TEEN CBSB sessions were well received by the 9th grade health class. Most of the students were interactive during the sessions and found the sessions to be informative and helpful in learning how to live a healthy lifestyle. The themes that developed from the analysis of the exit questionnaire highlighted the fact that rural high school 9th graders do not know how to set healthy lifestyle goals and what to do to achieve them. Specific lessons in the CBSB sessions that students liked and felt were most helpful included dealing with anger and stress, portion control, importance of physical activity, and the traffic light diet. This diet is very basic with red being foods to avoid, yellow as foods to allow while being cautious about eating too much, and green as foods that were good for them and could be eaten more often. Using visual aids enhanced the CBSB sessions. For example, a spaghetti portion served in a restaurant in the

1960's fit well into a sandwich bag, while a serving size today was double that and had to be put in a gallon size bag.

Incorporating these sessions into the 9th grade health class was beneficial for youth in a rural area as most teens would not be able to stay for an afterschool program due mostly to transportation issues. Melnyk and colleagues (2009) found afterschool programs a barrier to students participating, due to other demands such as babysitting and work. However, having students in the classroom who were not participating in the program may have served as a distraction to the COPE students, as these students would talk during the sessions or laugh at comments the participants would make. Yet, some of the students who did not sign assents and were not active participants appeared engaged in the sessions so may have benefited from hearing the discussions. Several students commented after the program ended that if it were offered again, they would participate. Overall, the CBSB sessions were effective in helping many of the students begin to change their behavior positively, which is the first step in changing habits that leads to making healthy choices resulting in losing or maintaining weight. Evidence of this change is that on several occasions during and after the intervention, the project leader saw parents of the teen participants in the local grocery store who reported that they were shopping for more healthy foods at their child's request.

Self-esteem

Unhealthy eating behaviors have been associated with low self-esteem in adolescents (Martyn-Nemeth, Penckofer, Gulanick, Velsor-Friedrich, & Bryant, 2008) and, according to Cameron (1999), there is a risk that self-esteem may be lower in children who participate in weight management programs. However, self-esteem of the adolescents participating in the COPE program who had a low self-esteem at baseline improved significantly. These findings

support the evidence that incorporating the COPE program into a health class curriculum is an effective strategy in improving self-esteem.

Parent Education

In addition to the positive findings among COPE teens, the COPE program had a positive effect on the healthy lifestyle behavior, beliefs, and perceived difficulty in parents of the COPE participants, though not statistically significant. Parent participation in this program was less than 50% and only 25% completed the exit questionnaire. After parents signed the consent for their child to participate in the study, the pre-intervention healthy lifestyles questionnaires were mailed to them and 25 were returned. To get a better response post-intervention, parents were offered a $10 gas card as an incentive to return the questionnaires. However, only 12 parents returned the post-intervention questionnaires. The reason for this is not known.

One study (Johnson, Pilkington, Lamp, He, & Deeb, 2009) found that parents, especially those who were overweight themselves, responded to a BMI result outside the healthy range for their child, and took action to improve it. Parents were not notified of their child's weight and BMI during this COPE program, and this could have impacted the outcome. There may have been more involvement had the parents received letters advising them of their child's measurements, especially for those who were overweight or obese. Additionally, for future school-based COPE programs, obtaining monthly measurements may be beneficial for those parents and teens who set healthy lifestyle goals that include weight loss.

Physical Activity

One objective of this project was to increase physical activity among the adolescents; however, this was not measured due to lack of participation by the students. They lost, broke, or

forgot to wear their pedometers. During the first two weeks, 120 pedometers were distributed to the 55 initial participants. There was not much interest in increasing their steps and many of the students said they did not have time to keep a self-report record. None-the-less, the students were encouraged each week to increase the time spent "moving" in some way, whether walking, dancing, sports, or bicycling. Some participants verbally reported what they had done during the week toward increasing their activity, but most did nothing other than participate in the 20 minutes of physical activity during health class. Most of the students reported that they spent less sedentary time after starting the program. Decreasing sedentary time is known to have a positive effect on weight management (Lau et al.,2006; Patrick et al., 2006; SIGN, 2003 & 2010). While Harris et al. (2009) found that school-based interventions using physical activity alone has not been found effective in improving BMI, studies have found that multi-behavioral interventions that include increased physical activity (Floodmark, et al 2006; Summerbell et al., 2005; Kitzmann, et al., 2010.) are effective in weight loss and prevention of obesity.

Based on the open-ended questionnaires, students liked the 20 minutes of physical activity most of all. The students engaged in twister games, jumping rope, tug-of-war, basketball, relay races, dodge ball, etc. Winners were given a small reward such as a healthy snack or pencil. The weather made it difficult to do outside activities during most of the COPE program and often the gym was not available, thus the physical activity had to be done in the class room. This limited the activities to light aerobics, musical chairs, or jump rope contests during some weeks, but the students enjoyed moving about after sitting for long periods. One issue with taking the students to the gym was that a few would not return to class as we walked back to the classroom, while others would be loud and disrupt school by yelling in the hallway. Also, some students thought the games "were for children" and they would not participate. This occurred more with musical

chairs, therefore it was stopped and replaced with other physical activities such as twister that could be done inside the classroom. Using what the students believe is age appropriate activities is important in order to get full involvement.

Recommendations

This study offers evidence that education along with cognitive behavior skills building with a parent educational component combined with physical activity is an effective strategy in improving healthy lifestyles and weight management among teens. The COPE Healthy Lifestyles TEEN program can be incorporated in the regular health class for high school students and could feasibly be taught by the health teacher after being trained in the COPE educational and CBSB sessions. In this setting, the COPE curriculum could be enhanced by having the school nurse and/or the school based nurse practitioner participate in the program. Students respond well to visual aids. Specifically, these need to be utilized to teach portion control and choice of foods. Findings from this project will be presented to the county school board with the recommendation of adding it to the health class curriculum. Another consideration would be to offer the COPE program to middle school students in order to modify behavior earlier. The parent participation in this study was low, therefore future studies should concentrate on improving the communication with parents of the COPE participants. A final recommendation for future school-based COPE programs is to incorporate a measurement of depression and anxiety among the COPE participants since there appears to be a correlation between elevated depressive symptoms and obesity.

Limitations

One main limitation in this study is that it was a convenience sample, therefore should not be generalized to other populations. Further, this study was a one group pre-experiment, not a

randomized controlled trial, so threats to internal validity exist. In addition, there may have been a Hawthorne effect because the students were recruited from the health class and knew they were being studied. Therefore, they may have changed their behavior based solely on the fact that they knew the purpose of the study was to evaluate weight loss, thereby motivating them to demonstrate their accomplishments. Another factor may have been that some of the students were already concerned about being overweight and were more motivated to lose weight at the start of the program than those who became aware of being overweight at the start of the program.

Conclusions

Obesity among teens is a major health problem worldwide. West Virginia ranks among the top ten states in the U.S. for obesity. Children spend more of their waking hours at school than at home. Therefore, it is imperative that strategies aimed at obesity prevention and weight loss be incorporated into the school curriculum. The COPE Healthy Lifestyle TEEN program was effective in significantly improving healthy lifestyle behavior among 9th grade students in a rural health class. Additionally, a sub-group of students with low self-esteem at baseline had significantly improved self-esteem after participating in the COPE program. Weight, BMI, BMI%, healthy lifestyles behavior, beliefs, and perceived difficulty in engaging in healthy lifestyle behaviors improved in the teens as well as their parents. The positive findings of this study provide further evidence that multi-component strategies that include cognitive behavioral skills building sessions and parent education, combined with increased physical activity can be effective in the prevention and treatment of adolescent obesity and can easily be incorporated into a high school health class.

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Appendix A:

Parent Newsletter One

COPE Parent Handout One

WELCOME to the COPE Healthy Lifestyle TEEN program. This is the first of three information letters you will receive during the next few weeks while your teen is participating in the COPE program in the 9th grade health class.

THANK YOU for completing the parent questionnaires and returning them to me. And, thank you for permitting your child to participate in the COPE program.

GOAL of the COPE program: to help you and your teen gain the knowledge and skills that are important to make healthy choices and lead to a healthy life including how to keep you both physically and mentally healthy. The sessions will focus on healthy decision, nutrition, and exercise. The skills your children learn now can be used throughout their lives. You as parents can learn new skills as well to make changes in your lifestyle. You are never too old to make positive changes in your life.

PARENTS' ROLE: You as parents are asked to play a supportive role as well as have the opportunity to look at your own current choices toward a healthier lifestyle. Your relationship with your teen for this program is not to "police" their nutrition or exercise habits, but rather to give encouragement for the things they do well.

DEFINITION OF "HEALTHY LIFESTYLE": Healthy lifestyle is one in which a person makes healthy choices to think and behave in a way to promote the best possible health for both his or her mind and body, and follows through on those choices. This includes:

- The amount and type of food that we eat
- How much we exercise
- Whether we use cigarettes, drugs, and alcohol
- The way we cope with stress
- How we deal with anger
- How we relate to other people

REMEMBER: when teens think positively, eat nutritiously, and exercise, they will feel good physically and mentally, and experience less stress and negative moods.

HOW CAN YOU SUPPORT YOUR TEEN?

You can support them to eat healthier-

- No junk food in the house
- Grocery shop together and pick healthy food
- Bake or broil foods instead of fry them
- Decrease visits to fast food restaurants
- Eat meals together as a family

Encourage a more active lifestyle-

- Go for walks together
- Start an exercise class in your neighborhood or try a new activity together
- Rent an exercise video and do it together
- Ride bicycles together

WHY BUILDING HEALTHY LIFESTYLE HABITS ARE IMPORTANT FOR TEENS:

Habits are things that are done routinely, often without even having to think about them. They take time to develop as well as take time to stop. Be patient with yourself when developing new healthy lifestyle habits and breaking old, unhealthy habits. The earlier that healthy habits are established, the more likely people are to continue them as they grow older. But, it is never too late to change your habits, especially as you are a role model for your teen. It is easier not to start harmful habits than to stop them once they are started.

UNHEALTHY HABITS:

- Skipping breakfast
- Eating fast food frequently
- Drinking alcohol (moderation)
- Smoking
- Negative thinking ("I'm no good", "I'm stupid", "I can't do anything right"
- Watching excessive amounts of TV

HEATLHY HABITS:

- Positive thinking
- Eating 3 meals a day
- Exercising at least 5 times a week

We are going to work on creating habits to achieve a healthy mind and body. We will guide them to problem solve and figure out how they can overcome the barriers that prevent them from developing healthy lifestyles.

SELF-ESTEEM: is how you see and feel about yourself. It comes from within, but people often let what others think of and say about them determine how they feel about themselves.

SIGNS OF POOR SELF-ESTEEM:

- Always worried about what others think about you
- Giving in to peer pressure
- Not trying things for fear of failure

- Using drugs and alcohol
- Having premarital sex
- Being depressed
- Getting jealous
- Loosing their temper easily

SIGNS OF HEALTHY SELF-ESTEEM:

- Not being afraid to try new things
- Feeling happy
- Not being overly concerned with what others think about them
- Standing up for what you believe in
- Not giving into peer pressure

WHAT IMPACTS TEEN'S SELF-ESTEEM?

- Media and how it portrays the ideal person
- Grades
- Friends
- Sports
- Hobbies
- What others say about them

YOU CAN HELP support the growth of your teen's self-esteem by saying positive things about them, to them on a daily basis. A positive attitude on both you and your teen's part can make things happen.

HOW TO SET GOALS AND ACHIEVE THEM:

Does your teen dream about what they want to do or be as they get older? Belief in their ability to reach their dreams is very important for a person to achieve their goal. We encourage small steps/goals toward change. Change has to happen within the person - that person has to want to change. Too large of a goal will be discouraging. SUPPORT the goals your teen may discuss with you. You may even want to develop some goals to achieve together. Setting high, but realistic goals are important.

TWO THOUGHTS TO PONDER ON:

Ø "Belief at the beginning of anything is the one thing that will ensure success"
---------William James

Ø "What the mind can see and believe, it can achieve"
--------Walt Disney

Appendix B:

Letter of Support

CALHOUN COUNTY HIGH SCHOOL
HC 89 BOX 118
MT. ZION, WV 26151
Telephone (304) 354-6148 • Fax (304) 354-7382

May 11, 2009

To Whom It May Concern:

Calhoun Middle High is pleased to have this opportunity to participate in the Healthy Life Style TEEN Program with Teresa Ritchie. We plan to include this TEEN program in our 9th grade health class. We believe the program will provide teenagers with the skills to make positive choices and maintain positive attitudes.

I have spoken with Teresa Ritchie several times to plan implementation into our curriculum. If I can answer any questions or be of assistance, please contact me at 304-354-6148 ex 13.

Sincerely,

Karen Kirby
Principal

Appendix C:

COPE Healthy Lifestyle TEEN Program Exit Questionnaire for Teens and Parents

Code _____Date_____

COPE Healthy Lifestyle TEEN Program Exit Questionnaire For Teens and Parents

1. Was the program helpful? (If yes, please describe what you found helpful)

2. What did you like most about the program?

3. Would you recommend this program to a friend? (If yes, why? If no, why not?)

4. How could participation have been made easier for you?

5. Would you like to participate in a similar program in the future?

Appendix D:

Healthy Lifestyle Behavior Scale for Teens

Code Number
Date

Healthy Lifestyle Behavior Scale for Teens

	Directions: Please answer the following questions to the best of your ability.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I make healthy food choices.	1	2	3	4	5
2	I exercise on a regular basis.	1	2	3	4	5
3	I exercise with my friends/parent.	1	2	3	4	5
4	I limit television viewing and video game playing to 2 hours per day or less.	1	2	3	4	5
5	I eat fresh fruits and vegetable snacks.	1	2	3	4	5
6	I say something positive to my Parent/friends every day.	1	2	3	4	5
7	I eat less salt and fat in my diet.	1	2	3	4	5
8	I drink only two sugared drinks a day (for example, regular soda or juice).	1	2	3	4	5
9	I choose water as a beverage instead of a sugared drink at least once a day.	1	2	3	4	5
10	I set goals I can accomplish.	1	2	3	4	5
11	I eat at least three meals a week with my family.	1	2	3	4	5
12	I do not add salt to my foods.	1	2	3	4	5
13	I eat broiled or baked foods instead of fried foods.	1	2	3	4	5
14	I talk about my worries or stress every day.	1	2	3	4	5
15	I do what I should do to lead a healthy life.	1	2	3	4	5
16	I do healthy things to cope/deal with my worries and stress.	1	2	3	4	5

Appendix E:

COPE Healthy Lifestyle Belief Scale for Teens

Code Number

Date

Healthy Lifestyles Belief Scale for Teens

Below are 16 statements that relate to your overall health and well-being. There are no right or wrong answers to the following statements. Please circle the number that best describes your agreement or disagreement with each statement.

		Strongly Disagree	Disagree	Don't Care	Agree	Strongly Agree
1	I am sure that I will do what is best to lead a healthy life.	1	2	3	4	5
2	I believe that exercise and being active will help me to feel better about myself.	1	2	3	4	5
3	I am certain that I will make healthy food choices.	1	2	3	4	5
4	I know how to deal with things in a healthy way that bother me.	1	2	3	4	5
5	I believe that I can reach the goals that I set for myself.	1	2	3	4	5
6	I am sure that I can handle my problems well.	1	2	3	4	5
7	I believe that I can be more active.	1	2	3	4	5
8	I am sure that I will do what is best to keep myself healthy.	1	2	3	4	5
9	I am sure that I can spend less time watching TV.	1	2	3	4	5
10	I know that I can make healthy snack choices regularly.	1	2	3	4	5
11	I can deal with pressure from other people in positive ways.	1	2	3	4	5
12	I know what to do when things bother or upset me.	1	2	3	4	5
13	I believe that my parents and family will help me to reach my goals.	1	2	3	4	5
14	I am sure that I will feel better about myself if I exercise regularly.	1	2	3	4	5
15	I believe that being active is fun.	1	2	3	4	5
16	I am able to talk to my parents/family about things that bother or upset me.	1	2	3	4	5

Appendix F:

COPE Healthy Lifestyle TEEN Perceived Difficulty for Teens

Code Number
Date

Perceived Difficulty Scale for Teens

	Directions: Please answer the following questions. How hard or easy is it to do the following things?	Very hard to do	Fairly hard to do	Neither hard nor easy to do	Fairly easy to do	Very easy to do
1	Eat healthy.	1	2	3	4	5
2	Not eat unhealthy foods that I like.	1	2	3	4	5
3	Exercise regularly.	1	2	3	4	5
4	Exercise instead of watching TV, relaxing, or using the computer.	1	2	3	4	5
5	Buy healthy foods to eat.	1	2	3	4	5
6	Find a safe place to exercise.	1	2	3	4	5
7	Have exercise equipment at home (for example, jump rope, weights, sneakers).	1	2	3	4	5
8	Take the time to buy healthy foods.	1	2	3	4	5
9	Take the time to help plan and prepare healthy meals.	1	2	3	4	5
10	Take the time to exercise regularly.	1	2	3	4	5
11	Take the time to plan an exercise schedule.	1	2	3	4	5
12	Cope/Deal with stress.	1	2	3	4	5

Appendix G:

Physical Activity Self-Report Form

COPE Student Log

Week One: Number of steps _____

Week Two: Number of steps _____

Week Three: Number of steps _____

Week Four: Number of steps_____

Week Five: Number of steps_____

Week Six: Number of steps_____

Appendix H:

Rosenburg's Self-Esteem Scale

Code Number

Date

Rosenberg's Self-Esteem Scale
for Teens

Below is a list of statements dealing with your general feelings about yourself. If you **STRONGLY AGREE**, circle **SA**. If you **AGREE** with the statement, circle **A**. If you **DISAGREE**, circle **D**. If you **STRONGLY DISAGREE**, circle **SD**.

		Stongly Disagree	Disagree	Agree	Stongly Agree
1	I feel that I'm a person of worth, at least on an equal plane with others.	SD 0	D 1	A 2	SA 3
2	I feel that I have a number of good qualities.	SD 0	D 1	A 2	SA 3
3	All in all, I am inclined to feel that I am a failure.	SD 3	D 2	A 1	SA 0
4	I am able to do things as well as most other people.	SD 0	D 1	A 2	SA 3
5	I feel I do not have much to be proud of.	SD 3	D 2	A 1	SA 0
6	I take a positive attitude toward myself.	SD 0	D 1	A 2	SA 3
7	On the whole, I am satisfied with myself.	SD 0	D 1	A 2	SA 3
8	I wish I could have more respect for myself.	SD 3	D 2	A 1	SA 0
9	I certainly feel useless at times.	SD 3	D 2	A 1	SA 0
10	At times I think I am no good at all.	SD 3	D 2	A 1	SA 0

Appendix I:

COPE Healthy Lifestyle Behavior Scale for Parents

Code Number:
Date

Behavior Scale
(Parent)

Indicate the number which best describes how often you did these things during the past week.

		Rarely or none of the time (1 day or less)	Some or a little of the time (1-2 days)	Occasionally or an average amount of time (3-4 days)	Most or all of the time (5-7 days)
1	I helped my child to make healthy food choices.	0	1	2	3
2	I encouraged my child to exercise regularly.	0	1	2	3
3	I limited my child's television viewing, computer use, and video game playing to 2 hours or less per day.	0	1	2	3
4	I had fresh fruits and vegetable snacks in my home.	0	1	2	3
5	I said something positive to my child about him or her every day.	0	1	2	3
6	I paid attention to the salt and fat in my diet.	0	1	2	3
7	I drank no more than two sugared drinks a day (for example, regular soda or juice).	0	1	2	3
8	I drank water instead of a sugared drink at least once a day.	0	1	2	3
9	I set goals with my child that he/she can accomplish.	0	1	2	3
10	I sat down to eat meals with my family.	0	1	2	3
11	I did not add salt to my foods.	0	1	2	3
12	I broiled or baked foods instead of frying.	0	1	2	3
13	I talked to my child about his/her worries or stress.	0	1	2	3
14	I did what I am asking my child to do to have a healthy life.	0	1	2	3
15	I suggested to my child healthy ways to cope when he/she was worried or stressed.	0	1	2	3
16	I exercised with my child.	0	1	2	3

Appendix J:

COPE Healthy Lifestyle Belief Scale for Parents

Code Number

Date

Healthy Lifestyles Belief Scale for Parents

Below are 16 statements that relate to your overall health and well-being. There are no right or wrong answers to the following statements. Please circle the number that best describes your agreement or disagreement with each statement.

		Strongly Disagree	Disagree	Don't Care	Agree	Strongly Agree
1	I am sure that I will do what is best to lead a healthy life.	1	2	3	4	5
2	I believe that exercise and being active will help me to feel better about myself.	1	2	3	4	5
3	I am certain that I will make healthy food choices.	1	2	3	4	5
4	I know how to cope/manage in healthy ways with things that stress me.	1	2	3	4	5
5	I believe that I can reach the goals that I set for myself.	1	2	3	4	5
6	I am sure that I can handle my problems well.	1	2	3	4	5
7	I believe that I can be more active.	1	2	3	4	5
8	I am sure that I will do what is best to keep myself healthy.	1	2	3	4	5
9	I am sure that I can spend less time watching TV.	1	2	3	4	5
10	I know that I can make healthy snack choices regularly.	1	2	3	4	5
11	I can deal with pressure from other people in positive ways.	1	2	3	4	5
12	I know what to do when things bother or upset me.	1	2	3	4	5
13	I believe that my family will help me to reach my goals.	1	2	3	4	5
14	I am sure that I will feel better about myself if I exercise regularly.	1	2	3	4	5
15	I believe that being active is fun.	1	2	3	4	5
16	I am able to talk to my family about things that bother or upset me.	1	2	3	4	5

Appendix K:

COPE Healthy Lifestyle Perceived Difficulty for Parents

Code Number
Date

Perceived Difficulty Scale for Parents

	Directions: Please answer the following questions. How hard or easy is it to do the following things?	Very hard to do	Fairly hard to do	Neither hard nor easy to do	Fairly easy to do	Very easy to do
1	Eat healthy.	1	2	3	4	5
2	Not eat unhealthy foods that I like.	1	2	3	4	5
3	Exercise regularly.	1	2	3	4	5
4	Exercise instead of watching TV, relaxing, or using the computer.	1	2	3	4	5
5	Buy healthy foods to eat.	1	2	3	4	5
6	Find a safe place to exercise.	1	2	3	4	5
7	Have exercise equipment at home (for example, jump rope, weights, sneakers).	1	2	3	4	5
8	Take the time to buy healthy foods.	1	2	3	4	5
9	Take the time to help plan and prepare healthy meals.	1	2	3	4	5
10	Take the time to exercise regularly.	1	2	3	4	5
11	Take the time to plan an exercise schedule.	1	2	3	4	5
12	Spend time with your child.	1	2	3	4	5
13	Parent your child.	1	2	3	4	5
14	Cope/Deal with stress.	1	2	3	4	5

Appendix L:

COPE Budget

COPE Capstone Budget

Item	Cost	Explanation
COPE Books	$700.00	Printed at Office Depot/or Minnie Hamilton
Questionnaires	$100.00	Printed at Office Depot/or Minnie Hamilton
Parent Handouts (Newsletters)	$100.00	
Log Book	$5.00	Participant physical activity log book will be computer generated and printed at WVU; project leaders log book will be purchased
Transportation	$115.00	15 round trip travel to the school to teach the COPE sessions and 3 trips for meetings
Postage/Envelopes	$200.00	6 mailings to parents, 2 require stamped envelopes to return questionnaires
Pedometers	$400.00	80 mid-priced pedometers ($5.00 each)
Music for dance component	$30.00	Dance music (2 CD's)
Incidentals	$100.00	Shipping/handling, tax on purchased items, change in number of participants requiring increased postage/envelopes and parent handouts
Total	$1,750.00	